

Introduction

I. PURPOSE – Construction of Publicly-Owned Facilities

HJR #28 was a request by Montana’s 58th Legislature “encouraging the Department of Administration to initiate a collaborative study concerning the process and criteria for state agencies to use in awarding public works construction contracts.” This report is the fulfillment of that request.

All public entities in Montana are currently limited in statute to what is commonly referred to as the “low-bid” system (i.e. design-bid-build used to select a contractor on the basis of lowest cost) whereby public facilities are to be fully designed and then subsequently released for bidding and construction. This philosophy operates under the large assumptions that all projects are equal to one another regardless of their size or complexity, can be constructed on-time and on-budget by any contractor who is able to obtain bonding, and that this method will result in the greatest value to the taxpayers. While this scheme may be appropriate in many instances, there are circumstances where other contractual methods may actually be of greater benefit to the public¹.

The purpose of this study is to investigate and report on the applicability, procedures, criteria, and recommendations for potential changes to the procurement process for the construction and renovation of state-owned facilities². It does not discuss the bidding and award of highway or transportation projects, local government buildings, or school district construction. Per HJR #28, the recommendations will:

- (1) state how a decision is reached to award a contract on the basis of "best value";
- (2) establish criteria for ensuring a fair, equitable, and objective selection process;
- (3) determine qualifications for members of selection panels used to award contracts; and,

¹ “On average, projects delivered using design-build project delivery system took **33.5% less time** to deliver and had a **unit cost 6.1% less** than . . . the design-bid-build project delivery system. Projects delivered under the construction management at risk project delivery system took an average of **13.3% less time** . . . and had a **unit cost 1.6% less** than . . . the design-bid-build project delivery system.” Selecting Project Delivery Systems, from the executive summary, published by the Project Delivery Institute, 1999. (emphasis added)

² Much of the information in this report is taken from publicly-available documents so as not to “re-invent the wheel.” Quotations and credits are used for known copyrighted material.

- (4) establish a process ensuring that taxpayers receive the most cost-effective project possible.

II. BACKGROUND – Project Delivery in the State of Montana

The State of Montana is committed to honoring the public trust and thereby effectively supports full and open competition among all qualified and responsible contractors, sub-contractors, and suppliers. Public owners must be diligent in honoring this public trust while searching for more innovative and flexible approaches to construction in order to provide high quality, long-lasting, environmentally-compatible facilities that meet the immediate and future needs of using entities.

The State’s use of alternative project delivery options must ensure the method selected is properly and fairly applied to serve the public interest with quality, cost effective and timely construction. Whatever option is utilized, the selection process for both design services and construction procurement should be consistent, open, and competitive.

None of the alternative delivery options discussed in this report are currently allowed by State law. Given current State policy and statutory requirements, the “traditional” low-bid method of *Design/Bid/Build* will continue to be the method by which most construction will be performed in State government unless there are changes made in statute.

This report suggests that alternative project delivery options can be appropriate for the public sector if the selection process is open, fair, objective, cost-effective, and is free of political influence.

III. DEFINITIONS – The Options

- a. Design-Bid-Build (D-B-B): the traditional method for building construction, renovation, and repair and maintenance projects where the State (typically through a contract with a consulting architect or engineer) designs the project, solicits bids, and then awards a construction contract to the lowest responsive, responsible bidder. It is possible to use D-B-B with performance criteria and not simply on a low-bid, pecuniary basis.
- b. Design-Build (D-B): the process of entering into a contract with a Design-Builder who agrees to perform both the design and construction of a project based upon preliminary criteria established by the Owner.

- c. Design-Builder: any individual, partnership, joint-venture, corporation, firm, or other legal entity that will furnish all necessary design and construction services for a project, including architectural and engineering services.
- d. Construction Manager at Risk (CM @Risk or GC/CM): the process of entering into a contract with a construction manager who agrees to perform all necessary services to design and/or construct a project for a negotiated fixed price (i.e. “@ risk”) or GMP (guaranteed maximum price).
- e. Construction Manager: any individual, partnership, joint-venture, corporation, firm, or other legal entity that will furnish all necessary design and/or construction services for a project, including architectural and engineering services.
- f. Criteria Package: the document prepared and furnished by the State that contains sufficient information necessary to guide proposers in the preparation and submission of a competitive sealed proposal for a Design-Build or CM @ Risk project. The document must contain a detailed scope of work statement, project requirements (design concepts, technical requirements, quality standards, specifications, State’s estimated cost for the project, duration for design and/or construction, format and deadline for proposal submission), and selection criteria.
- g. Request for Qualifications (RFQ): request for submission of qualifications for a particular project based upon a brief synopsis of the Criteria Package. Requested information includes the respondent’s project history (information regarding previous project performance), project capacity (bonding capacity, assets/liability status, insurance), strategic management, and other factors critical for success. Typically used in a two-step procurement process for developing a “short list” from whom to request proposals. Can be combined with the RFP into a single step.
- h. Request for Proposals (RFP): request for submission of proposals based upon the Criteria Package.
- i. Competitive Sealed Bid: contains a bidder’s price for construction only in the traditional D-B-B method but can be used in a pre-qualification (i.e. two-step) bidding process.
- j. Statement of Qualifications: an entity’s response to an RFQ.

- k. **Competitive Sealed Proposal:** contains responses to an RFQ and/or RFP, including price, for performing the work contained in the Criteria Package. This document will need to contain detailed descriptive information and approach to designing, constructing, and managing the project in accordance with the Criteria Package. A proposed conceptual design, sequence of construction, schedule, and costs are necessary. Proposals are typically very large and contain drawings, tables, charts, sketches, pricing breakdown, etc.

IV. **PUBLIC OWNERS – Who in Montana constructs (i.e. the contracting entity for) what are considered to be publicly-owned buildings/facilities?**

- a. **State:**^{3 4 5}
 - i. Department of Administration
 - ii. Department of Fish, Wildlife, and Parks
 - iii. Department of Military Affairs
 - iv. Montana University System
- b. **Local Governments – Counties and Municipalities, including all political subdivisions thereof.**
- c. **School Districts – K through 12.**

Total annual spending by public entities for facilities construction in Montana is unknown. The data may be available from the various organizations that represent the public bodies (e.g. Montana League of Cities; Montana Association of Counties; Montana School Board Association). The separate state entities will also have distinct data available but such information was not requested as part of this report.

V. **CURRENT STATUTE – Present design and bidding mechanism**

- a. **State (design-bid-build):**
 - i. **DESIGN - 18-2-112. Appointment of architects and consulting engineers.** The department of administration shall appoint any architect or

³ Does not include Department of Natural Resources (dams, water conservation structures, etc.), Department of Environmental Quality (reclamation, mines, etc.), Department of Transportation (weigh stations, rest areas, etc. that are an integral part of a highway), or Department of Military Affairs (constructed with 100% federal funding on federal property).

⁴ Does not include construction projects done by each agency under the \$150,000 legislative approval limit established in 18-2-102(1).

⁵ Does not include any state leases or lease-purchases arrangements performed by the General Services Division of the Department of Administration (for all state agencies except DOJ) or by the Department of Justice (licensing offices, parole/probation offices, etc.).

consulting engineer retained for work on any building to be constructed, remodeled, or renovated by the state of Montana, its boards, institutions, and agencies from a list of three architects or consulting engineers proposed by the state board, institution, or agency where the work is to be done. The department need not appoint an architect or consulting engineer for repair or maintenance projects.

- ii. **BID – 18-2-301. Bids required -- advertising.** (1) It is unlawful for any offices, departments, institutions, or any agent of the state of Montana acting for or in behalf of the state to do, to cause to be done, or to let any contract for the construction of buildings or the alteration and improvement of buildings and adjacent grounds on behalf of and for the benefit of the state when the amount involved is \$75,000 or more without first advertising in at least one issue each week for 3 consecutive weeks in two newspapers published in the state, one of which must be published at the seat of government and the other in the county where the work is to be performed, calling for sealed bids to perform the work and stating the time and place bids will be considered.
- iii. **BUILD - 18-1-102. State contracts to lowest bidder -- reciprocity.** (1) In order to provide for an orderly administration of the business of the state of Montana in awarding public contracts for the purchase of goods and for construction, repair, and public works of all kinds, a public agency shall award:
 - (a) a public contract for construction, repair, or public works to the lowest responsible bidder without regard to residency. However, a resident bidder must be allowed a preference on a contract against the bid of a nonresident bidder from any state or country that enforces a preference for resident bidders. The preference given to resident bidders of this state must be equal to the preference given in the other state or country.

b. Local Governments (Counties & Municipalities):

- i. **DESIGN - 18-8-201. Statement of policy.** The legislature hereby establishes a state policy that governmental agencies publicly announce requirements for architectural, engineering, and land surveying services and negotiate contracts for such professional services on the basis of demonstrated competence and qualifications for the type of professional services required and at fair and reasonable prices.
- ii. **BID, AND THEN BUILD – 7-5-4302. Competitive, advertised bidding required for certain purchase and construction contracts.** (1) Except as provided in 7-5-4303 or 7-5-4310, all contracts for the purchase of any automobile, truck, other vehicle, road machinery, other machinery, apparatus, appliances, equipment, or materials or supplies of any kind in excess of \$20,000 or for construction, repair, or maintenance in excess of \$25,000 must be let to the lowest responsible bidder after advertisement for bids.

c. School Districts:

- i. **DESIGN - 18-8-201. Statement of policy.** The legislature hereby establishes a state policy that governmental agencies publicly announce requirements for architectural, engineering, and land surveying services and negotiate contracts for such professional services on the basis of

demonstrated competence and qualifications for the type of professional services required and at fair and reasonable prices.

- ii. **BID, AND THEN BUILD – 20-9-204. Conflicts of interests, letting contracts, and calling for bids.** (3) Except for district needs that must be met because of an unforeseen emergency, as defined in [20-3-322\(5\)](#), or as provided in subsection (4) of this section, whenever the estimated cost of any building, furnishing, repairing, or other work for the benefit of the district or purchasing of supplies for the district exceeds the sum of \$25,000, the work done or the purchase made must be by contract. Each contract must be let to the lowest responsible bidder after advertisement for bids. The advertisement must be published in the newspaper that will give notice to the largest number of people of the district as determined by the trustees. The advertisement must be made once each week for 2 consecutive weeks, and the second publication must be made not less than 5 days or more than 12 days before consideration of bids. A contract not let pursuant to this section is void. The bidding requirements applicable to services performed for the benefit of the district under this section do not apply to:
 - (a) a registered professional engineer, surveyor, real estate appraiser, or registered architect;

Defining Best Value

I. “BEST VALUE” – What is it?

HJR #28 requires that any recommendations made to the 59th Legislature provide “how a decision is reached to award a contract on the basis of “best value.” In order to make sure decisions are made from fair, equitable, and objective criteria that will result in an award on the basis of “best value,” an agreeable definition is needed that will provide the proper tool for such decision-making.

From the information and analysis provided below, a recommended working definition of “Best Value” public works construction contracting is:

“The most advantageous balance of price, quality, and performance achieved through competitive procurement methods in accordance with stated selection criteria.”

Inherent in procuring best value is the consideration of all relevant costs over the useful life of the acquisition whatever that may be and not solely the initial project cost (inclusive of investigation, programming, design and construction). The analysis necessary to achieve best value should not be confined to the actual procurement process. Rather, it should begin in the planning and appraisal of alternatives and continue through the definition of requirements which would include cost/benefit analysis for determination of the best combinations of quality, service, and time, assessment and award criteria, evaluation of sources, selection of designer, selection of contractor, preparation, negotiation, execution and award of contract, contract administration and post-contract evaluation and operation.

It is doubtful the design profession or construction community is interested in the Total Life-Cycle Cost but such an approach is incumbent upon the public owner to gain an understanding of the complete expense and costs for undertaking the construction of new facilities or renovation of existing buildings. Sadly, such pre-planning efforts and strategic development seems to be somewhat non-existent in the public sector. Although an attempt is made to accomplish this at the State’s level through the Long Range Building Program under the responsibility of the Architecture & Engineering Division of the Department of Administration.

Although HJR #28 requested only that the State investigate possible changes to the methods for awarding construction contracts and not with such a holistic approach as Total Life-Cycle Cost, an attempt is made in this report to

outline the need for such additional effort. Pre-design effort in analyzing needs, strategies, etc. is extremely critical.

II. RESEARCHING “BEST VALUE”

Research into the term “best value” reveals there are a range of views on this topic beyond construction contracting. However, the best sources seemed to be from federal governments:

- From the U.S. Army Material Command’s “Contracting for Best Value” Guidelines (AMC Pamphlet 715-3):

“In the broadest sense, best value is the outcome of any acquisition that ensures we meet the customer’s needs in the most effective, economical, and timely manner. It’s the result of the unique circumstances of each acquisition, the acquisition strategy, choice of contracting method, and award decision. Under this concept, best value is the goal of sealed bidding, simplified acquisition, commercial item acquisition, negotiated acquisition, and any other specialized acquisition methods or combination of methods you choose to use.”

- From the Defense Systems Management College definition of terms:

“The most advantageous trade-off between price and performance for the government. Best value is determined through a process that compares strengths, weaknesses, risk, price, and performance, in accordance with selection criteria, to select the most advantageous value to the government.”

- From the Federal Acquisition Regulation (FAR), Subchapter A – General, Part 2 – Definition of Words and Terms, 2.101:

“‘Best value’ means the expected outcome of an acquisition that, in the Government’s estimation, provides the greatest overall benefit in response to the requirement.”

- From the Treasury Board of Canada’s Contracting Policy:

- “9.0 Best Value

- 9.1.1 As stated in the policy, the objective of government procurement contracting is to acquire goods and services and to carry out construction in a manner that enhances access, competition and fairness and results in best value or, if appropriate, the optimal balance of overall benefits to the Crown and the Canadian people. Inherent in procuring best value is the consideration of all relevant costs over the useful life of the acquisition, not solely the initial or basic contractual cost.
- 9.1.2 The clear identification of the requirements associated with the decision to contract is of primary importance. There are acquisitions in which the requirements and specifications are clear, the records of likely suppliers are relatively uniform and discretionary judgment is at a minimum; price or cost is therefore the primary consideration. However, other procurements call for greater judgment and it is unwise to focus simply on price or lowest initial

cost (in recognition of this fact, the higher competitive authorities may be used for service contracts in which the lowest or best value bidder is selected - see definition of competitive contract in Appendix A). Often, the goods or services offered by different suppliers are not identical. Assessments and trade-offs should be made between different performance characteristics, costs, dates of delivery, service, follow-on procurement and logistic support. Equally important are those cases in which a product or facility has been designed to meet specific government requirements. In such instances, detailed analysis of materials and components in terms of their function and price may be needed before the contracting process. This should clarify the requirement which should, in turn, result in best value.

- 9.1.3 The analysis necessary to achieve best value should not be confined to the actual procurement process; it should begin in the planning and appraisal of alternatives and continue through the definition of requirements which would include assessment and award criteria, evaluation of sources, selection of contractor, preparation, negotiation, execution and award of contract, contract administration and post-contract evaluation. Sophisticated evaluation techniques, such as cost/benefit analysis, may be needed to define the best combinations of quality, service and time considerations, at the lowest total cost over the useful life of the acquisition.”

III. CURRENT MONTANA LEGAL RULINGS PERTAINING TO LOW BID

In *Debcon, Inc. v. City of Glasgow*, 2001 MT 124, the Montana Supreme Court referenced several past rulings reinforcing the concept that procurement laws are for the benefit of the public:

- “. . . the provision of law for ‘letting contracts of this character to the lowest bidder is for the benefit of the public, and does not confer any rights upon the lowest bidder as such.’” – *State ex rel Stuewe v. Hindson* (1912), 44 Mont 429.
- “. . . stating that in an action for an injunction brought by a taxpayer the statutory provision requiring competitive bidding is ‘designed to prevent favoritism and to secure to the public the best possible return for the expenditure of funds.’” – *Ford v. City of Great Falls* (1912), 46 Mont 292.
- “In 1941, in a fairly lengthy discussion, this Court again emphasized that the public works statute requiring that contracts be ‘let to the lowest responsible bidder’ was enacted ‘for the protection of public interests and must be complied with by the municipal authorities for the benefit of the public.’” – *Koich v Cvar* (1941), 111 Mont 463.

Of great interest in the *Debcon* ruling is the following declaration by the Court with regard to defining the “lowest responsible bidder”:

“This Court declared that it was settled law that the phrase ‘lowest responsible bidder’ does not merely mean the lowest bidder whose pecuniary ability to perform the contract is deemed the best, but the bidder who is ***‘most likely in regard to skill, ability and integrity to do faithful, conscientious work, and promptly fulfill the contract according to its letter and spirit.’***”

And, “***. . . the Court determined that the term ‘responsible’ did not refer to pecuniary ability only and included ‘judgment, skill, ability, capacity,***

and integrity;’ and, therefore, contract need not go to the lowest bidder who tendered sufficient bond.”

And, “This Court further declared in Koich that in exercising its discretion to select the lowest responsible bidder, ‘the officers in who the power is vested must determine the fact, and such determination cannot be set aside unless the action of the tribunal is arbitrary, oppressive or fraudulent’ . . . Ultimately, we concluded that in the ‘absence of any showing of bad faith, fraud, or corruption, we cannot say, as a matter of law, that the city council abused its discretion.”

Given the above, is it possible that best value procurement solution/selection for construction contracts have been possible for some time but that public entities have treated the low-bid situation as pecuniary only? Has this come about due to a lack of information regarding the bidders communicated to the public body for its deliberation and consideration? Or, is the low-bid delivery method simply one method that has run its course as the only option to be considered in the public sector in order to determine the best bidder who has the requisite skill, ability, and integrity?

The above information seems to indicate that public entities are REQUIRED to hire the bidder who is “MOST LIKELY . . . TO FULFILL THE CONTRACT” (emphasis added), not the one who can simply provide the lowest price or who is even of average competence at best. The public owner appears to be required by the intent of statute and the interpretation of the court to award to the BEST, MOST QUALIFIED bidder.

In the above rulings there appears to exist a large assumption that the public owner has sufficiently defined its needs and is then able to objectively choose the bidder that is “most likely in regard to skill, ability and integrity to do faithful, conscientious work, and promptly fulfill the contract according to its letter and spirit” and will perform it with the best “judgment, skill, ability, capacity, and integrity.” However, this may seldom be the case in the low-bid environment depending upon one’s perspective and how public entities in Montana have been performing their construction procurements.

The definition of best value and criteria for awarding work in the public sector in Montana on the above basis should test itself against the following questions:

1. Does a public entities investigation, analysis, and decision-making pass the test of being for the “benefit of the public” and “for the protection of the public interests?”

2. Is the public entity to whom the public has vested its authority the best possible source to determine this benefit and protection notwithstanding any arbitrary, oppressive, fraudulent, bad faith, or corruption findings?

It would seem the delivery method chosen for construction (i.e. design-bid-build, design-build, CM @ Risk, etc.) is secondary to defining the needs in order to determine how a “best value” conclusion is reached for a particular project. The selection criteria for making an award is not the best value, but must be based upon a decision of what constitutes best value for each particular project.

However, along with defining the needs of a project, it is highly important that selection criteria be well defined in order that the most objective, fair, equitable, and competitive determination is made for award. Neither the public nor the construction industry, are served by subjective reasoning and undefined criteria or random decisions.

Trying to define what is in the best interests of the public for a public works contract is difficult task due to the variables involved in facility needs. Is a project needed at the cheapest price or in the least amount of time? Is the full life-cycle cost of the building the determining factor or is it a loss of revenue due to a lack of new space? Does a building best serve the public interest by being “green” or by having the most square footage? Is the public better served by having higher quality materials installed by a knowledgeable contractor or, again, by getting the cheapest constructed cost with lower quality products? What about the benefits to the public by having a contractor provide input during the design process to add quality, provide valuable construct-ability input, and/or reduced cost?

As a facility owner has the best understanding of its needs and the most information upon which to base defining those needs, it seems appropriate that the owner must have the ability and opportunity to establish the criteria upon which a selection is made. This seems to be the point of enacting statutes for the protection of the public interests, vesting public officials with the responsibility to make appropriate decisions, and in the Supreme Court’s opinion that contractors possess a high degree of qualification and not simply a low price or bonding capacity.

From the definition of “Best Value” provided above, it is possible for the public entity to determine the necessary selection criteria, receive adequate information, and make the most appropriate delivery method, and award selection.

Absent past performance criteria from all the bidders, the analysis of evaluating bidders’ performance and qualifications for performing work

becomes an exercise in determining whether or not a particular bidder can meet MINIMUM work standards rather than allowing the State to select the best contractor to obtain the MAXIMUM benefit (i.e. to actually achieve Best Value!).

Pre-Design Phase

I. PRIOR TO A “BEST VALUE” DECISION⁶:

Information is essential to reduce risk in decision-making. With this in mind as applied solely to procurement of publicly-owned facilities, the following recommendation is offered: considerable effort should be expended in “pre-design” on every project in order to work toward making a decision that constitutes Best Value for a particular project. Pre-Design can also be called “Project Programming.”

Generally speaking, no two projects are identical. Over the past several years there has been considerable discussion among state agencies, legislative committees, and the private sector related to improving the state’s construction procurement process through alternative delivery methods. However, appropriations for design and construction of major capital projects occurs prior to key aspects of the project being fully identified or, undefined until after the project received legislative funding. These missing aspects and omitted issues include:

- Comprehensive identification of the agency’s specific functional, technical, and space requirements,
- Analysis of available options to meet an agency’s needs,
- Study of “Total Project Cost”;
- Site selection and complete assessment of existing conditions,
- Project cost estimate based on the complete facility scope and site specific conditions,
- Identification of the intended project delivery approach, and
- Intended project schedule.

Current practice has the State hiring design consultants after the project is approved by the legislature. This practice creates difficulties and problems resulting from the lack of definition prior to obtaining funding. Such problems often include numerous and significant changes during the design and construction phases as different or additional requirements are identified. Sites and schedules are often altered and post-funding assessments of existing facility conditions can drastically affect budgets. Subsequently, the

⁶ The State of Georgia’s “Guidelines for Pre-design of Major Capitol Projects”, Office of Planning and Budget and the Georgia State Financing and Investment Commission, April 2001, used as a guide and basis for this report. Portions used without quotation marks. Used by permission of Mike Kenig, Holder Construction Company, as one of the major participants in its development.

project scope is reduced to fit the authorized funding and the construction schedule is often delayed as a result.

If best value is limited simply to selection of a delivery method for construction, the problems caused by a lack of pre-design effort will not be addressed and an inadequate amount of information will be available upon which to base a truly “Best Value” decision from the standpoint of a building’s total life span. On the other hand, if “Best Value” simply means the hiring of the best contractor, then the pre-design information is of little value to this discussion.

If the public owner wants to perform a holistic, strategic approach to facility planning, an adequate pre-design effort should be conducted. Conducting a pre-design study prior to receiving project approval is intended to:

- Reduce the majority of project uncertainty related to: Scope, Major project/funding milestones, Selection of project delivery method for construction, and Cost;
- Determine the Total Project Cost for the life of the facility;
- Establish an appropriate total budget for the complete implementation of the project; and
- Document the above information into a single comprehensive report that would allow decision-makers the ability to quickly identify the ‘best value’ options available.

An excellent definition of this process is: “Pre-design means the phase of an activity [project] where requirements, programming, site analysis, and other appropriate studies are conducted to develop essential information, including cost estimates, to support and advance the decision-making process prior to the design and implementation phases of an activity.” - Official Code of Georgia Annotated (OCGA) §50-22-2(2.1)

Pre-design advances a given project by laying the foundation of information. It provides an opportunity to conduct and document trade-off analyses related to scope, phasing, site options, and alternatives more cost-effective to the entire operation and function of public entities than simply waiting to do so during design. However, some may resist pre-design efforts due to the necessary investment of time and money to adequately and accurately undertake the effort.

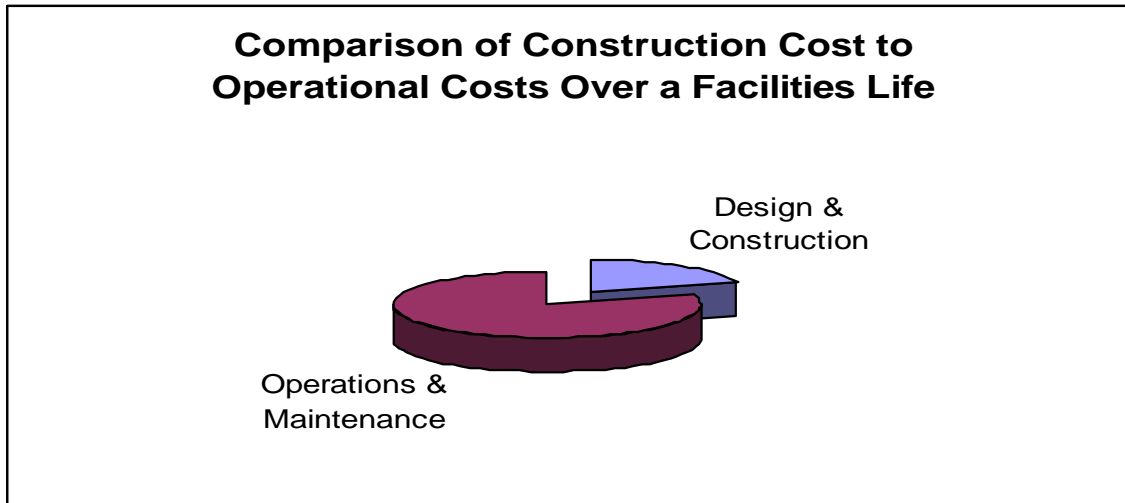
II. IMPLEMENTING PRE-DESIGN:

When funded as a separate activity, pre-design should not be considered or construed as an advance commitment for subsequent funding of a project for full design and construction. Rather, its intent is to provide the necessary

information to support the decision-making process regarding subsequent project approval and funding actions. The pre-design activity assumes an orderly development process where a project moves from a definition of needs based on the agency's stated mission, goals and objectives, through pre-design, programming, design, construction, and final occupancy. This also assumes that an agency's capital outlay requests for large projects from year to year will follow the same basic process and that there will be few, if any, requests for design and construction funds for projects for which there has been no request for pre-design funds in a prior budget cycle.

At present, many agencies have a considerable number of project requests in the State's Long Range Building Program that have a tremendous need for pre-design research, investigation, and information. These requests are reviewed and sorted at various levels to ascertain the most critical needs and then a list is recommended in the Governor's biennial budget. However, this still effort still falls short of providing comprehensive analyses needs, strategies, or of available alternatives.

Absolutely essential in this phase is an analysis of Total Life Cycle Building Costs. At present, Total Life Cycle Building Costs are not analyzed. Life Cycle Costs are defined as the complete cost or financial responsibility for a building over its intended useful life. While these percentages vary for the type of building and its "life", design and construction costs range between 20% and 40% of the Total Life Cycle (dependent upon the type of project). These percentages do not include personnel costs for those who occupy a building. By far the largest expense in facilities is the operational and maintenance (O&M) cost which can often be as much or more than three (3) times the original expense of construction. O&M costs for public entities cannot be written-off as a "cost of doing business" as they can in the private sector, nor can buildings be depreciated for tax reasons, nor can their market value offset the costs as these facilities are seldom sold. These are real costs that require adequate funding in order to properly preserve and care for public assets. Consideration of future costs is vital to making Best Value decisions.



Depending on size and complexity of a project, pre-design work can be conducted with in-house personnel with the requisite experience and expertise or, contract with a consultant utilizing its personnel to manage and coordinate the process.

Conducting an appropriate level of pre-design effort as a distinct project phase on large projects is an upfront expenditure of time and effort that serves to advance a project. However, some may view it simply as an imposition of additional work. This phase should be embraced by all agencies since most all of the pre-design items have to be addressed at some point in the approval or design process and absolutely prior to construction but are currently dictated by the funding and or time constraints rather than being a pre-requisite to the funding and scheduling. It would also be beneficial for agencies to conduct strategic planning concerning their long-term facilities needs. It is anticipated that the early determination of project requirements, constraints, options, analyses, necessary decision-making, and documentation that are an integral part of pre-design will not only assist, but also actually expedite, a project to its timely and successful completion, and would result in a project that more fully meets the needs of its users. This is getting to a point of determining BEST VALUE! However, funding is necessary to conduct such a pre-design, programming effort. This hurdle has yet to be addressed in appropriation, statute, form, or function within state government.

With the appropriate information in place, a decision is then possible regarding which delivery method is the best “fit” for a particular project if it receives future funding and is a certainty for construction. The Long Range Building Program projects six years into future state building needs and implementing pre-design (i.e. programming/planning) on large, significant projects would be a relatively simple matter of funding this preliminary effort for those most viable, large-scale projects that are in the 3rd and 4th year

aspects of the project. Therefore, funding pre-design in the 1st and 2nd year of the LRBP (i.e. the current Governor’s budget request in the concurrent session) positions the subsequent legislature in a more viable manner with respect to state construction.

III. THE COST OF PRE-DESIGN:

Pre-design activity is not something that is lost effort once a project is funded. Rather it is a critical programming function that must be performed on every significant project! However, at the present time, this function is done after funding is received for the overall project and the programming (i.e. pre-design) investigation and planning is modified to fit the budget. In other words, agency needs and functions are trimmed to match the funding rather than first being identified and presented as the main factors that should drive a project.

This pre-design investigation and programming effort typically ranges between 1% and 2% of construction cost and currently is accounted for in the total project cost. The Department’s recommendation is simply that this funding be provided prior to making the overall project request of the Legislature. Again, this is not lost effort but all information is transferred directly into the design effort once full project funding is provided.

It must be kept in mind that not all projects would need this advanced funding and it should in no way commit or obligate the legislature to proceed with a project simply because a pre-design phase effort has been funded and completed.

It is anticipated that new and renovation projects exceeding approximately \$3,000,000 be provided with advance, pre-design funding to properly determine all significant aspects of these larger projects in order to establish the most accurate and appropriate funding levels.

Best-Value Decision Making Process^{7,8}

I. IS THERE A PROBLEM WITH LOW-BID ON STATE CONSTRUCTION?

“The concept of using one entity to design and construct a facility is not new. This concept can be traced to facilities as far back as 1800 BC, where ‘Master Builders’ designed and constructed buildings by commission for kings and emperors. This early form of ‘Design-Build’ was at that time considered traditional. The name ‘Master Builder’ has changed over the years and so has society’s political-economic structure, but the concept remains the same. Today, design-build is considered ‘non-traditional,’ and has been such since the 1800’s AD. Economic philosophies, complexities in design, engineering, and construction have played significant roles in creating the environment for the current ‘traditional’ form of facilities acquisition, viz., ‘Design-Bid-Build,’ where design and construction are accomplished under two contracts.”⁹

The short answer to the question posed above is: yes, and no. By definition, low bid and the design-bid-build process are not always the same – it is the use of selecting a contractor based solely on the lowest price that results in many of the difficulties:

1. Yes, problems exist primarily due to:
 - a. First, design issues –
 - i. Designers are hired through a qualification-based selection process (i.e. based upon their ability to perform and their experience with particular types of projects) per 18-8, part 2 MCA.
 - ii. Design professionals attempt to rigorously define the owner’s needs to reduce the risk to both the owner and designer. Additionally, there are fewer and fewer constructors who can adequately build something without a tremendous amount of detail.

⁷ Response to HJR #28 request on Line 27 of the resolution: “state how a decision is reached to award a contract on the basis of “best value.”

⁸ Major portions of the State of Georgia’s “Project Delivery Options” Recommended Guidelines, Volumes 1 and 2, Office of Planning and Budget and the Georgia State Financing and Investment Commission, April 2001, are used in this report as it most accurately contains and expresses the delivery options and the best methodology in how to utilize them. This is an acknowledgement by the author of this report that some of the work contained herein is not original in all instances and use of the Recommended Guidelines was granted by some of its authors.

⁹ Design-Build Instruction Manual for Military Construction, U.S. Army Corps of Engineers, October 1994

- iii. This level of detail is requested by the public owner so that all contractors, regardless of experience or skill level, can put a construction price, or bid, on the project. Neither skill nor experience are factors for award on publicly-funded projects.
 - iv. Such a level of detail is driving up the cost of design. Public projects typically cost more to design than private ones for various reasons: detail; numerous people/agencies involved; skill level of contractors who bid public projects; etc.
 - v. Despite their best efforts, design professionals cannot produce plans and specifications free of errors.
 - vi. The plans and specifications are then used as a minimum standard for enforcement against the contractor. In other words, the contractor must provide at least what is shown and specified in the documents. Given the fact that design errors WILL exist, problems and conflicts are inherent in such a system that must rely on enforcement rather than cooperation.
- b. Second, bidding issues –
- i. Contractors are awarded contracts solely, or almost solely, on price with little to no consideration for their past performance or experience on particular types of construction.
 - ii. It is often assumed by those requesting bids that anyone able to obtain bonding is qualified to bid. This assumption is erroneous as not all contractors are able to construct all buildings. This places the “proof” of a contractor’s abilities in the hands of a surety or bonding company who may only look at assets and finances as evidence of capability or as something to recover in the event of default. It does not demonstrate who is “most likely in regard to skill, ability and integrity to do faithful, conscientious work, and promptly fulfill the contract according to its letter and spirit” and will perform it with the best “judgment, skill, ability, capacity, and integrity.” If public entities rely on the bonding company, it transfers responsibility to the surety who is not well suited to this task.
 - iii. Similarly, a contractor who erects pre-engineered steel buildings may not be qualified to construct a chemistry lab building. The same goes for subcontractors. However, an increasing number of contractors are bidding on buildings they have little experience in constructing. By demanding ever more detailed plans and specifications, the owner is actually encouraging inexperienced contractors to bid.
 - iv. Bidders see the plans and specifications as the maximum standard they have to meet and anything they can do to reduce the cost to them is either necessary to “win” the bid or is their profit. Immediately, this perspective puts the bidders at odds with the owner and design professional.

- v. Also, many bidders tend to apply very little margin (i.e. mark-up) to low-bid work in order to get projects. This also makes their room for error very small when the actual construction begins.
 - vi. “The contractor is in business to make a profit and can increase profits by dropping the performance as low as is acceptable. The contractor will not use their profit to pay for the additional quality or performance.”¹⁰
 - vii. Work is sometimes bid low in the hopes of identifying change orders during construction to make a profit and complete the work.
 - viii. The most qualified contractors with the most highly paid, highly skilled craftspeople tend to NOT bid public work very often because they are quickly hired by the private sector and because they cannot regularly compete with the lower quality contractor. This environment often leaves the public sector with the least qualified contractors and least skilled craftspeople. Establishing prevailing wage rates or using union labor has not demonstrated a change in this area.
 - ix. Highly skilled, highly qualified contractors get NO credit for being able to perform at a very high level when doing public, low bid work since most contractors are effectively reduced to a “commodity” by the current low-bid system. In other words, they are all seen as equals regardless of their abilities, skill level, or experience when all that is necessary to win a project is submission of a low price.
- c. Third, construction issues –
- i. The plans and specifications are certain to have “holes” or mistakes. The design profession is NOT legally required to make a perfect set of plans but only meet what is defined as a “reasonable standard of care.” On the opposite side of the mistakes is the contractor who can legally rely on the plans to be error-free. This leaves the owner to cover the varying spread between a “standard of care” and perfection in the design. In the low bid environment, this is where most conflicts, claims, and disputes arise.
 - ii. The conflict between minimum and maximum views of the plans dictates more expense to the project for interpretation, oversight, inspection, testing, and observation. The owner assigns a project manager who pays the design professional, a material testing company, occasionally a third party observer, and a commissioning agent all in an effort to observe the contractor and make sure the project is constructed to at least the minimal level of quality established by the plans.

¹⁰ Best Value Procurement, pg 4-11, Dr. Dean Kashiwagi, Performance Based Research Group, Arizona State University, 2002.

- iii. Additionally, many contractors will turn their “what’s the most I have to do” perspective into what they can get by with so profit can be maximized and they will do so in four major areas:
 - 1. Lower performance in all areas until corrected by the owner or designer.
 - 2. Offer inferior products/materials due to specification problems.
 - 3. Identify problems and delays necessitating change orders.
 - 4. Provide inexperienced or lower-skilled workers rather than craftsman who make more than prevailing wage.
- iv. By bidding with little margin for error in order to win the job, any mistakes, or delays, or disruptions that cost the contractor will motivate him to minimize expenses, lower performance, and provide less quality even further in order to lose as little money as possible. This increases the adversarial nature of the relationship with the owner and design professional.
- v. Quality control, as viewed by the low-bid contractor, is the responsibility of the design professional and owner (i.e. to catch those things that are in non-compliance). Quality control is the responsibility of the contractor but the low-bidder often views the departures from quality by seemingly thinking that “if the architects or owners don’t catch it, it must be okay.”
- vi. Change order work tends toward the norm rather than the exception. While the owner does often request changes, low bid work is replete with examples of small inconsistencies or mistakes in the plans leading to large change order costs, claims, and/or disputes. Certainly there is often blame to be shared by the design professional, but it is too simplistic a response to always do so. Were the conditions unforeseen? Did the owner properly identify his needs to the designer? Is it truly an error or simply an omission? Change orders are always a high risk proposition for the owner.

All of the above is driven by the OWNER’S (i.e. the public entity in this instance) choice of design and construction methodology (i.e. the low-bid system). It is the owner who sets the parameters of the playing field, not the designer or contractor, by saying that price is the most important factor. To change this mentality and process, it is the owner who must first make the appropriate and necessary changes.

- 2. No, the Architecture & Engineering Division and other state agencies performing construction have learned to operate in this environment and deal with the myriad of issues and problems. But, it comes at the cost of supervision, management, verification, and additional expense. The above situations are anticipated with low-bid and the Division

deals with the issues as the circumstances dictate. It must be recognized that this process is not the most efficient or the most economical for the taxpayer in terms of cost, quality, or timely deliver of projects when total project cost is considered, and not solely the amount bid for the construction. Low-bid projects typically run 25% to 35% in addition to the construction amount for things such as design fees, services, oversight, and contingencies necessary to implement the State’s low-bid process.

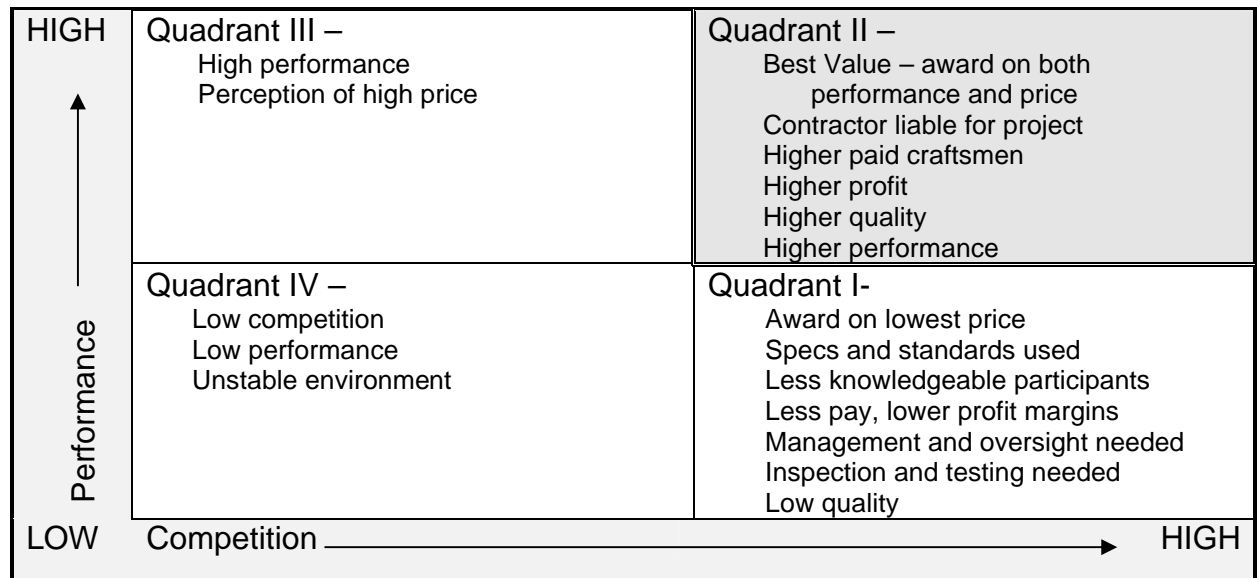
What is it the State is really looking for with regard to design and construction of facilities? Is it the absolute lowest price or is it performance? Or is it a combination of both? If performance is never considered in the hiring of contractors, how can one come to expect a high level of quality in the adversarial, low-bid environment? Some will say, “Just put what you want in the plans and specifications.” This, again, sets a minimum standard and is an overly simplistic response to a complicated work environment and lacks an understanding of the overall picture regarding construction from funding through operation. In response, the A&E Division is curious as to how the public owner is to: 1) completely eliminate risk and mistakes in design; 2) ensure bidders do not “play games” with the requirements in order to win the bid; 3) make certain only those who are qualified bid; 4) reduce conflict during construction; 5) or guarantee performance? The answer lies in a process whereby the public owner hires PERFORMANCE from all parties and not simply the lowest price.

II. BEST VALUE DECISION-MAKING PROCESS FOR CONSTRUCTION:

This step is essential for compliance with the first requirement of HJR #28: (1) state how a decision is reached to award a contract on the basis of "best value".

A best value decision, per the above discussion, exists not within the delivery method itself but within the hiring of design professionals and contractors who PERFORM THE BEST at the most appropriate cost (but not necessarily the lowest cost). The search through diverse delivery methods is one where owners have sought different mechanisms to look for PERFORMANCE and not simply a low price.

The following graph indicates that Quadrant II maximizes performance and competition:



Construction Industry Structure¹¹

“The DBB processes in Quadrant I also require *construction [administration] and inspection* which is usually provided by the design/engineering firm. The design and specifications are a *regulatory document* which when combined with the contractors forced to bid the lowest possible price, encourages contractors to submit change orders and deliver the lowest possible performance. . . . Contractors identify the reason for construction nonperformance as the low-bid environment (Erdmann, 2002). Due to the poor construction performance of the DBB process, the designers’ value has been questioned, leading to reduced fees and design functions (Post 2001). This results in more incomplete designs, which may lead to more risk from change orders and lower performance. Oblivious to this cycle, owners continue to look for the lowest design costs.”¹² It should be added that public owners continue to look for the lowest construction cost which helps perpetuate the downward spiral.

The “perfect” project delivery method is unattainable. While no project delivery option is without error, one alternative may be better suited than another based upon the unique requirements for a particular project. This report does not assume that there is only one acceptable option for project delivery or that any one method is better than another as each has its advantages in specific applications.

¹¹ Best Value Procurement, pg 4-17, 4-20, and 5-4, Dr. Dean Kashiwagi, Performance Based Research Group. Arizona State University. 2002.

¹² Best Value Procurement, pg 5-5, Dr. Dean Kashiwagi, Performance Based Research Group, Arizona State University. 2002.

As discussed in the section defining Best Value, it appears that the State already has the discretion to use a similar analysis in evaluating bidders' performance and qualifications for performing work even in a D-B-B environment. Again, this would be acceptance of the minimally qualified at the lowest price. The State has not pursued actions regarding the views expressed in case law primarily due to outside pressures and concerns regarding fairness and objectivity. And, it's not really a “Best Value” as sought by HJR #28.

Therefore, should a maximum benefit be sought, requirements for each project should be evaluated on an individual basis to determine which of the various options would most likely produce the best outcome for the State.

The List of Options - For the purpose of this report, delivery methods are defined by several distinguishing characteristics related to the number of primary contracts for design and construction and the basic services provided.

Three (3) primary delivery methods are defined with their distinguishing characteristics as follows (all other options are variables of these three):

1. Design/Bid/Build - two primary contracts, General Contractor award made by responsible low-bid after entire design is complete through competitive bidding process.
2. Design/Build: single contract for design and construction services but selection may or may not be based solely on price and is done through a competitive proposal process.
3. CM @ Risk, (similar to GC/CM): one or two primary contracts, Construction Manager may or may not manage the design process and takes over traditional role of General Contractor but selection is not based solely on price and is done through a competitive proposal process.

Another key aspect related to the use of any delivery option is the procurement and selection process to be followed, particularly as it relates to the construction services. There are two basic public procurement processes:

- a. Competitive Sealed Bid - the selection is based solely on price (which must be clearly defined), with the award going to the responsible and responsive bidder submitting the lowest price.
- b. Competitive Sealed Proposal - proposals require the use of evaluation factors, which may or may not include price, cost, or fee as part of the

evaluation criteria. There are four evaluation methods that may be followed with competitive sealed proposals:

- i. Performance/Qualifications-based;
- ii. Performance/Qualifications and fees, but not “cost of work” (i.e. not the material and labor costs associated with construction, similar to a cost-plus, fixed-fee contract arrangement¹³);
- iii. “Cost of Work” and other factors such as, project history (information regarding previous project performance), project capacity (bonding capacity, assets/liability status, insurance), strategic management, other critical elements dictated by the State; and,
- iv. Technically acceptable and the lowest cost.

These may be summarized by the following table¹⁴:

PROJECT DELIVERY METHOD TRANSLATOR:						
Combined Design & Construction Contracts?	NO separate ↓	YES combined ↓	YES combined ↓	NO separate ↓	YES combined ↓	NO separate ↓
Cost of Work a Selection Criteria?	YES ↓	YES ↓	YES ↓	YES ↓	NO ↓	NO ↓
Cost of Work the <u>Sole</u> Criteria?	YES ↓	YES ↓	NO ↓	NO ↓	NO ↓	NO ↓
Delivery Method	D-B-B* low price only	D-B low price only	D-B value based	CM @ Risk value based	D-B qualifications based	CM @ Risk qualifications based

* Only method currently available to the State of Montana.

Any delivery option can be implemented with any selection process but some combinations may not be practical or desirable. As a result, delivery option decisions and either bid or proposal decisions should be made concurrently upon completion of the pre-design effort.

III. MAJOR FACTORS IN THE DECISION-MAKING PROCESS¹⁵

¹³ Cost-plus is not currently a contracting option per 18-2-314 MCA.

¹⁴ Courtesy of Mike Kenig, Holder Construction Co., “Introduction to Project Delivery Methods”

The next step is to determine which method is most appropriate for a particular project. Consideration of the major factors influencing the project in question and deliberation of the project requirements in light of the unique characteristics of each of the various project delivery options must be done. By applying these factors, the owner should be able to select the most appropriate method. Just selecting the “right” delivery option is not enough. There are numerous details to be addressed in order to achieve the desired successful end results.

The Factors – low bid D-B-B is the only delivery method presently available for the State of Montana. As previously stated, there are many factors affecting projects that might reduce the effectiveness of this method thereby necessitating consideration of other delivery options. Although there are numerous factors involved in making a decision concerning which option to recommend, by the time a few “major” factors are applied, it becomes apparent which options are least appropriate and which are the most appropriate. These Major Factors are divided into five categories as shown in the table:

Schedule/ Necessity to Overlap Phases	Ability to Define the Project Scope/ Potential for Changes	Owner's Internal Resources & Philosophy	Desire for a Single Contract or Separate Contracts	Regulatory/Leg al or Funding Constraints
Tight Project Milestones or Deadlines	Scope Definition	Ability or desire to define and verify program & design content /quality	Ability or desire to take responsibility for managing the design	Regulatory and Statutory Requirements
Amount of overlap of design and construction phases	Potential for Changes during Construction	Experience with the particular delivery method & forms of contracts	Ability or desire to eliminate responsibility for disputes between designer and contractor / want single point of responsibility	State Budget and Funding Cycle
	Need/Desire for Contractor input during design	Ability to participate in multiple trade contractor / supplier evaluation	Allocation of Risk to the parties who are best able to control it	

¹⁵ The Major Factors portion of the State of Georgia's Project Delivery Options, Volume 2 of 2 – Selecting the Appropriate Project Delivery Option: Recommended Guidelines, pgs 6-13, May 2003 are used here almost in their entirety as this was the best source and process.

	Flexibility to make design changes after construction cost commitment	Desired contractual relationship and ability to recoup savings		
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While there are other areas to be considered, addressing these major factors will guide the process for selection of the most appropriate delivery method. Focusing on and determining responses to these factors early in the project cycle will increase the opportunity for a successful project. These factors are discussed below in more detail but it must be remembered that the amount of control an Owner will have throughout the process, and how and when the Owner allocates and manages the project risks, will be affected by how each of the factors is addressed.

- a. Risk Allocation – The risk associated with design and construction of any facility is generally not affected by the chosen project delivery method. However, the timing and the allocation of the risk does vary with each delivery method as can be seen from the contractual arrangements identified above. Therefore, each delivery option provides a different approach to allocating the risks and typically will result in timing differences in transferring the various risks.
- b. Risk Control - The risk(s) associated with a construction project should be allocated to the party with the best ability to control and manage that risk (a.k.a. the contractor). The purchase and the requirement for purchase of insurance coverage is just one way in which owners, designers, and contractors try to allocate and control some of the risk. Contracts are also used to attempt transfers of risk. In selecting the appropriate delivery option, a thorough review of the potential risks and their allocation should be performed. To accomplish risk control, each of the relevant factors should be reviewed and considered.
- c. Negligence – Risk allocation and risk transfer must not be confused with the issue of negligence. The risks discussed in this section are associated with quality and completeness of design, timeliness and quality of construction, cost control, worksite safety programs, etc. All parties to a contract(s) are required by state law to be liable for their own negligence per 28-2-2111 Montana Code Annotated.

Each of the Major Factors from the above table is discussed below in order to help guide the Best Value decision with respect to selection of a Delivery Option:

1. Schedule / Necessity to Overlap Phases

a. Tight Project Milestones or Deadlines

Critical Question: Is overlap of design and construction phases necessary to meet schedule requirements?

Schedule is always a consideration on construction projects and can be the deciding factor in the selection of the project delivery option. During the Pre-design Phase, a preliminary master schedule should be developed. This master schedule will include an estimated duration for each phase of the project including: identification of needs, project definition and planning, programming, concept design, all design phases, award, construction, commissioning, and occupancy timelines.

Simultaneously, the State should evaluate the date required for occupancy. Comparing this date to the date generated from early versions of the preliminary master schedule will indicate whether any acceleration or overlapping phases may be required. “Traditional” Design/Bid/Build is inherently a linear, sequential process as opposed to Design/Build or CM/GC, each of which is capable of overlapping phases in the design and construction process.

However, there are some criteria that should be followed when performing an analysis of the schedule. Since everyone wants a project completed quickly, simply identifying a rapid delivery because of an agency’s desire to do so is not sufficient justification. Examples of justification would include current rental/leasing costs, rapidly rising operating costs, inflation, bond repayment, unsafe working conditions, loss of revenue, enrollment or hiring demands, etc.

Ramifications: If the project requires a schedule that can only be maintained by overlapping the design and construction phases, then an alternative to the traditional D-B-B delivery scheme should be considered.

b. Amount of Overlapping of Design and Construction Phases

Critical Question: Is there time to complete the Design Development phase prior to starting construction?

Assuming it has already been determined that a traditional linear approach (D-B-B) to the design and construction phases will not work and some overlapping of the two phases is necessary, the next question is, “How much overlap of the design and construction is required?” If the construction start date is dictated by the construction completion date, and is required to be very early in the design process (e.g., during the Schematic or early Design Development stages), then the client agency requesting the facility should understand the additional responsibility and risk by the State

retaining design responsibility and holding of the design contract (i.e. two separate contracts – one for design and one for construction).

Other factors such as available resources to manage the design, experience with managing an aggressive decision-making process, and the possibility of being between the design firm and the builder are all closely related to one another in evaluating this factor.

Ramifications: If the project end-date dictates that construction start early in the design process, then the party responsible for managing the design and its timely completion needs to be considered. Transferring the design risk to the party responsible for construction may be a reason to consider using Design-Build in lieu of CM/GC.

2. Ability to Define the Project Scope / Potential for Changes

a. Scope Definition

Critical Question: Is the scope of work difficult to define?

Each client agency in the State is unique and will have special requirements that could have a major impact on determining the delivery method that will provide Best Value. Similarly, the complexity of the project and the ability to fully define the scope early in the process could also have an impact on determining the appropriate project delivery option. At present, the State will have a preliminary outline on a few major aspects of a project but very little information regarding the specifics of how a project will ultimately be completed. All of this takes a large amount of time and effort at the start of design simply to ascertain the essential particulars needed to properly define a project.

The critical points in the project needed to fully define the scope are: prior to selection; after selection, prior to establishing quality, cost, and schedule; after establishing quality, cost, and schedule.

Each delivery option will require different levels of scope definition at each of these critical points. The inability to fully define scope early in the process will have a direct impact on the client agency's ability to manage scope and cost increases later in the project.

This last statement concerning impact on managing scope and cost increases can readily be seen with the current State process:

- i. Agencies identify needed projects and submit them to the State for inclusion in the Long Range Building Program. The needs are defined in broad scope (e.g. a new addition to the College of Technology or renovation of a Chemistry Building) but there is little information available beyond a preliminary review and

projected cost and a desire to do a project. However, this is not to discount the effectiveness of the State's Facility Condition Index program to also help identify needs for renovation, repair, and maintenance.

- ii. The LRBP is prioritized and assembled by the Architecture & Engineering Division then submitted as part of the Governor's overall state budget.
- iii. Project approval works its way through the legislative process (typically House Bill #5 for the “cash” projects and House Bill #14 for those requesting general obligation bonds).
- iv. If a project is approved by the legislature, the funds and/or authority are set at a certain dollar limit that cannot be exceeded. This set dollar amount, having been established prior to complete pre-design work, has a significant impact on a project's scope and schedule since the real planning and programming have not yet been performed. This process is used because there are no dollars available to perform the pre-design effort. Therefore, the scope is adjusted to match the available funding which takes a lengthy period of time since the traditional method must be used.

Ramifications: If it is difficult to produce a set of drawings and specifications that fully describes the work in question (e.g., a renovation of an existing building), then one of the qualifications-based selection options should be considered.

b. Potential for Changes During the Construction Phase

Critical Question: Is there a significant potential for changes during the construction phase?

Whenever the scope is difficult to define or other issues tend to indicate that there is a high potential for changes during the construction phase, careful consideration should be given on how changes will be handled. If one of the competitive cost delivery options (D/B/B, CM/GC CC, D/B CC) is used, as much of the work as possible should be quantified before a lump sum cost is agreed upon. If possible, one of the competitive qualifications options (CM/GC CC, D/B CC) should be considered.

Ramifications: If the scope of the project is likely to change drastically during construction, then one of the qualifications-based delivery options may be more appropriate. An example might be a project where the tenants are unknown or likely to change. In this example, the identification of the tenants may be a cause for required

changes throughout all phases of the project including during the construction phase.

c. **Need/Desire for the Contractor Input during Design**

Section 1.01 Critical Question: Is Contractor input during design required or desired?

Throughout a project, the client agency will need to make decisions based on their definition of value. What varies from one project delivery option to another is who (which team member) is providing the information and when during the project sequence.

This report looks at two broad types of information: 1) Design Solutions and 2) Constructability (including cost and schedule review of design solutions). What differs with each delivery option is who is providing the information and when they are brought on-board in the process. Also, when the information is being provided, and whether the information is intended to be provided at specific points in time or continuously throughout the process, will depend on which delivery option is chosen.

There are many times when the demands of the project are unique or difficult to quantify. In these instances, the option of having the contractor on-board during the design phase can be very valuable. The contractor can assist in schedule development and monitoring, in constructability and budget/estimate reviews, in factoring in current market conditions, and in locating and procuring long-lead equipment items and trade contractors necessary for the work.

If there are significant schedule, budget, or constructability issues, it can be helpful for the decision maker to review these issues during the design phase. Many times the designer does not have the range of experience in the actual construction of a project to adequately address these issues. However, it should be noted that it is possible to hire a consultant to perform these tasks that will leave the agency open to all of the delivery methods and enable management and development of the scheme prior to commitment to a contractor.

Ramifications: If assistance of the contractor is desired during the design phase to assist in defining the scope, constructability reviews, schedule determination, or budget confirmation, then one of the alternative delivery options should be considered.

d. **Flexibility to Make Design Changes after Construction Cost Commitment**

Critical Question: Are your design and scope requirements fully defined?

The cost of making changes throughout construction of a project increases as the project develops (even as the design phases proceed). In the worst case, needing to make changes to work already in place; in an ideal situation the design should be developed to the point where the scope of work is well known and the amount of changes can be reasonably predicted before commitment to a contractor.

Where the design is used as the basis for selection of the contractor in a competitive cost environment (i.e. traditional design-bid-build, low-bid), its completeness will be a key factor in successful cost management of the project.

Ramifications: It is important when selecting a project delivery method to consider how tightly the scope of work can be defined and review whether design flexibility is required during the construction process. If a significant amount of flexibility is required after commitment to a contractor, then a qualifications-based selection method might be more appropriate than one of the competitive cost methods.

3. Owner’s Internal Resources & Philosophy

a. Ability or Desire to Define and Verify Program and Design Content Quality

Critical Question: Will the Owner utilize outside resources to verify quality?

The State’s assurance that there is a responsible person designated to verify quality during construction will relate directly to the State’s in-house resource availability and to what party the State assigns the role of project management. How much direct influence the State has on how quality is defined and verified will be directly affected by the specific delivery option is chosen.

The State’s definition of quality must be identified, communicated, and recorded early in the process. This all starts with the designer in the traditional design-bid-build process. The quality of a construction project can be characterized by the following:

- i. *Functional quality* – the ability of the facility space to meet the client agency’s program requirements (as well as code and safety requirements).
- ii. *Systems quality* – the ability of the various building systems to meet the client agency’s defined needs.

- iii. *Aesthetic (scope) quality* – the level of design and finish as defined in the design documents.
- iv. *Workmanship quality* – the physical execution of the design.

All of these are closely related. How they are defined and verified should be considered when determining which project delivery option to use.

In the standard Design/Bid/Build delivery option, the definition of quality is heavily dependent upon the architect’s/engineer’s ability to understand and translate the owner’s needs into a set of construction documents. In the CM/GC delivery options, this task is still assigned to the architect /engineer with assistance from the contractor. In Design/Build the design-builder assumes these duties. Production of quality during the construction phase is, in every option, the primary responsibility of the contractor, but the verification of that quality will vary between the options. The architect, as the owner’s representative, is directly responsible in Design/Bid/Build and construction management methods. The State assumes this role in design-build as it must define its needs (often with the assistance of design professionals) well enough for a design-build firm to execute the project per expectations.

Ramifications: If in-house resources are not available, then extra caution should be taken when using design-build. If design-build is desired and in-house resources are not available, outside resources should be engaged to assist in verifying that the quality desired by the owner is incorporated. Design-Build takes a considerable amount of time and energy, particularly in the early stages of project definition.

b. Experience with the Particular Delivery Option and Forms of Contracts

Critical Question: Is agency in-house personnel experienced in alternative delivery options or, if not, will in-house personnel be augmented by other agency or contracted personnel?

The responsibility for success on every State construction project ultimately rests with the State. Thus, the responsibility for overseeing and managing the entire process resides with the agency responsible for the contracts (i.e. the Architecture & Engineering Division for LRBP projects). A “project manager” typically handles this process. For a typical State project, this responsibility can be fulfilled in one of two ways: in-house resources or the hiring of design professionals. The majority of State projects involve hiring design professionals and consultants.

One factor to consider is the level of expertise and experience of the client agency requesting a construction project. In deciding which project delivery option and form of contract to recommend, the availability of client agency staff resources and experience is a major consideration. Some agencies perform construction routinely and have capable and available staff to be involved in all phases of the project.

Ramifications: If the client agency is inexperienced in construction projects, alternative delivery methods should be considered only for use by the A&E Division through its management of the LRBP.

c. Ability to Participate in Multiple Trade Contractor & Supplier Evaluations

Critical Question: **Do you need the ability to participate in the selection and evaluation of trade contractors or suppliers?**

There may be instances where direct interest in the selection and evaluation of subcontractors or suppliers for a portion or the majority of the work is important. For example, a complex security system within a building that will require the services of a particular type of subcontractor (i.e. prison security systems).

Instances may also occur where many elements of the project scope require development, particularly in a fast-track environment, and a relationship is required that offers a high degree of flexibility in choice and cost transparency from the subcontractor via the contractor.

Ramifications: Where the input required is limited to specific trades or suppliers it is important to ensure bid documents are structured in such a way to allow control over individual elements as necessary, in which case any of the delivery options would suit requirements. However, if one requires a high degree of flexibility across many elements of the project then a competitive, qualifications selection option will afford greater control and cost transparency.

d. Desired Contractual Relationship and Ability to Recoup Savings

Critical Question: **Does the Owner wish to have a complete and timely access to all of the Contractor’s Information?**

How the State selects the construction entity and the resulting contractual relationship will affect what information is required to be provided and when. For example, whether or not the State and the consultants are participants in the specialty contractor and vendor selection process and the information shared during this process, will be a direct result of the contractual relationship created with either a general contractor, design-builder, or construction manager. Access

to all available information may or may not be necessary or desired. The client agency should be aware that the selection of a project delivery option and the resulting contractual relationships would likely affect the manner in which information may be required.

Legally, a fiduciary relationship arises automatically in such situations. However, the specific form of fiduciary relationship contemplated in this document is the one arising when a person or firm has a duty to act for another on matters falling within a contractual relationship. More specifically, a person or entity acting in a fiduciary relationship to the owner owes the owner the duties of good faith, trust, confidence, and candor, and must exercise a high standard of care in managing money and property.

A Competitive Cost Proposal selection based on Total Construction Cost will generally result in a contractual relationship that is not a fiduciary one. This will affect the timing of the availability of information and the ability of the Owner to make use of that information. If the construction entity is not on board during the design (typical in Design/Bid/Build, low-bid when cost is the only consideration), collaboration at this stage is not at issue. If, however, some contractor involvement during the design phase is needed, a Competitive Cost Proposal, that includes considerations other than total construction cost, can be used in selecting the Construction Manager/GC or the Design/Builder. Nonetheless, the contractual relationship developed is generally very similar to Design/Bid/Build concerning access to information.

A Competitive *Qualifications* Proposal (the Construction Cost of Work not a factor [or not the prime factor] at the time of selection) will create a fiduciary relationship. This also allows complete and timely access to the selected contractor's information. If the project scope is difficult to define, or matching the scope to the project budget is anticipated to be difficult, then having a collaborative process could prove to be advantageous. In such situations, a qualifications-based selection might be more appropriate.

The State needs to be very concerned about the type of contractual relationships created by the various delivery options.

Ramifications: If the project necessitates an open, collaborative relationship among the parties, then a Competitive Qualifications selection should be considered with the restriction that certain documents provided by the selected contractor are considered to be trade secrets and confidential and not available to the general public.

4. Desire for a Single Contract or Separate Contracts

a. Ability or Desire to Take Responsibility for Managing the Design

Critical Question: Does the Owner have in-house design resources qualified to oversee design professionals, and does the owner have the ability to commit sufficient resources to design management?

The Architecture & Engineering Division has staff capable of providing quality oversight of design professionals for all agencies. Agencies must also make an honest self-assessment, taking into account factors regarding complexity of the project and competing obligations of staff and personnel to determine their ability to commit to a process other than design-bid-build.

Given assurance in agency ability, the agency can then consider the practicality of taking on the responsibility for providing the rapid and intense level of input and decision-making essential to making any alternative delivery method successful.

Ramifications: Ability and desire to be intensely involved in the design, making rapid decisions, and providing significant input to a project on very tight timelines are reasons to consider holding separate contracts for design and construction, and argue against Design-Build. If an agency is unable or unwilling to be fully engaged in the planning/selection process and to act quickly and decisively, then an alternative to D-B-B should not be considered.

b. Ability or Desire to Eliminate Responsibility for Disputes Between Designer and Builder / Single Point Responsibility

Critical Question: Does the Owner desire to hold a single entity responsible for coordination, collaboration, and productivity for the entire project?

A completed project is the result of extensive coordination of talent and resources. The skill sets of the designer are not the same as those of the builder. Viewpoints and interpretations differ, as do personalities, agendas, ethics, and levels of responsibility.

Although holding separate contracts allows the Owner to manage the project through the leverage of direct legal relationships with the designer and with the builder, the Owner takes on the responsibility for resolving disputes between the other two parties. If the Owner prefers to transfer that responsibility rather than use its contractual leverage, the tool is the single contract with an integrated contractual delivery method—Design-Build.

Ramifications: The integrated nature of Design-Build, with its single contract, allows the Owner to hold a single entity responsible for the project and keeps disputes between the designer and the builder in-house with the Design-Builder. The trade-off is the loss of Owner leverage and control.

5. Regulatory / Legal or Funding Constraints

a. Regulatory & Statutory Requirements

Critical Question: Do laws rules, regulations, etc., permit the use of an alternative project delivery method?

At present, there exists no mechanism within State statutes to allow any method other than a two-contract, design-bid-build, low-bid process. Additionally, funds are typically unavailable to pursue a Pre-Design phase as recommended above in order to determine whether or not an alternative method would be most appropriate.

On occasion, university projects have requested and received exemptions from statute in order to use alternative delivery methods: e.g. Washington-Grizzly Stadium and MSU Bobcat Stadium. These were done in an approach that resembled design-build.

Ramifications: The delivery option decision must be made early in the Pre-design phase and properly documented.

b. State Budget and Funding Cycle

Critical Question: Is funding available for construction at initiation of design?

The State's budget and funding cycle will have an impact on the timing, sequencing, and subsequent recommendation of a project delivery option. Since the legislature meets only in odd numbered years, the biennial cycle means that projects typically wait a considerable period of time for funding. Projects are conceived and proposed at least six (6) years in advance as mandated in the Long Range Building Program process. These are updated with each submission of the LRBP by the Architecture & Engineering Division. Of course, there are exceptions that arrive at the last minute (i.e. during legislative session) and make it into the approved project listing.

At present, statute provides only a few funding mechanisms for projects over \$150,000:

- i. All agencies must use the State’s LRBP cash or bonded program (HB #5 and/or #14), or an agency’s House Bill #2 funding (typically for repair and maintenance items); or,
- ii. Board of Regents of the University System can authorize construction of revenue-producing facilities and projects that are 100% federal or private funds (with consent of the Governor); or,
- iii. Department of Military Affairs can perform construction with 100% federal funds on federal land (with consent of the Governor).

Ramifications: These funding options make a Pre-Design phase effort extremely difficult but do make all alternative delivery options viable since 100% funding is “in hand” before any of the design and construction is pursued.

These decision-making factors can also be asked in the following manner with the objective response leading to a proper conclusion:¹⁶

- What is the relative size of the project?
- Is it technically complex or repetitive?
- Does it involve a lot of design or is the design solution relatively straightforward?
- What level of control over design is desired?
- Is the site suitable or will construction difficulties be encountered?
- Are there environmental issues with the site?
- Is schedule a critical issue?
- Does the agency have sufficient in-house project management expertise to use an alternative delivery method?
- Does the agency have sufficient time and energy to devote to an alternative delivery method?
- What are the funding concerns? Is fund-raising necessary?

Some of the advantages and disadvantages for an alternative method are:¹⁷

❖ **ADVANTAGES:**

- Single Point of Responsibility. The State deals will deal with one entity under a Design-Build approach. There is a single point of contact and contract responsibility for all performance during the project rather than the dual roles of design professional and contractor. For an agency with limited internal resources, the

¹⁶ Some questions are taken from the Oregon Public Contracting Coalition, Design-Build White Paper, February 2002.

¹⁷ Taken primarily from the Oregon Public Contracting Coalition, Design-Build White Paper, February 2002.

ability to focus contact and control can be an efficient way to manage a construction project but requires considerable front-end effort in defining its needs and criteria. This contact focus also provides an effective way to manage user input into the design process.

- Clear Outcome Definition. If the State and its agencies are able to clearly define the expected project outcome through the development of detailed program or performance specifications, the alternative delivery approach can be an effective way to deliver a construction project.
- Selection Flexibility. The selection of an entity through a competitive, qualification process other than low bid would allow the State to select a contractor based on factors, in addition to cost, that have been determined to be important. Further, this process would allow the State to address issues that would be difficult to address under a pure low bid process. For example, project technical approach can be evaluated, or proposers may be requested to propose unique performance guarantees to be incorporated into the project contract to assure that both broad and specific components of the project perform as expected.
- Cost Containment. The ability to contain cost is an advantage of an alternative method under several of its primary compensation schemes:
 - Lump sum: Lump sum contracts are typically arrived at by a competitive bid or competitive proposal process. In the low-bid environment, cost control is done through adversarial contracts and use of a contingency budget. In an alternative method, any increase in cost after contract execution due to sub-bids higher than estimated, or costs from items not identified in the Contractor-produced drawings but part of the original scope will have to be absorbed by the Contractor within the contract price. Likewise, any savings identified after award would belong to the Contractor in a typical lump sum, alternative contract.
 - Guaranteed Maximum Price: This method can be used for those situations where pricing is not easily determined prior to project procurement. Based on a program statement at the conclusion of schematic design, or later if desired, a Contractor is selected who does a comprehensive estimate of the cost to construct the project. This cost estimate becomes the basis for negotiation and establishment of a contractually agreed upon Guaranteed Maximum Price (GMP). This price includes two parts: 1) the expected cost to construct the project, and 2) a contingency amount that the Design-Builder believes should be available to cover

changes. Any increase in cost due to sub-bids higher than estimated, or costs from items not identified in the drawings but part of the original scope must be absorbed within the GMP. Also under a GMP approach, cost savings may be allocated between the State and the Contractor.

- Reduced Change Orders. Reduced opportunity for change orders is an advantage.

- Lump Sum: The alternative method Contractor has no incentive to make changes which increase costs to the design that it is developing. All such costs must be borne within the contract price unless:

- directed by the agency to proceed with a scope change; or
 - caused by concealed conditions.

In these cases, the Contractor may be entitled to an equitable adjustment, including profit as with traditional contracting.

- Guaranteed Maximum Price: The alternative method Contractor has no incentive to make changes to the initial design that requires additional funds since all costs must be held within the GMP that was provided at the end of either Schematic or the Design Development phase. If the State requests a major scope change, the Contractor generally receives some profit margin on the cost of the scope change. A scope change of this type may result in a higher rate of overhead.
- Fast-Track Construction: With a consolidated design and construction team, it is straight-forward and easier to implement fast-track construction. Different phases of the project development can overlap. In addition, the alternative Contractor can order items with very long lead times before design is complete.
- Continuous Operation. Schedule control exercised by the alternative method contractor benefits projects that need to continue in operation during construction (i.e. renovation of existing spaces). The Contractor's control of both design and construction allows for maximum flexibility in sequencing, staging, and work-around activities.

❖ DISADVANTAGES

- Limited Design Control. Under alternative delivery, the contractor typically takes the contractual lead and provides overall project management. The resulting support role of the design professional to the contractor (i.e. under the control of the contractor) means the design professional has no direct

contractual relationship with the State yet may still have a professional obligation to the State. Further, the less than direct control of the design professional may mean that the State’s control of design issues is diminished by alternative delivery. This may also lead to other concerns from within the profession concerning the demand for their services. This makes development of a detailed RFP package all the more critical for the Owner.

- Construction Quality Limitations. Since the typical alternative method project emphasizes schedule and less risk for the Owner, a focus on specific construction quality issues may be difficult to achieve. To avoid this situation, a detailed scope of work and performance specification clearly defining the quality requirements should be issued with the contract documents before selection of a contractor is made.
- Cost Exposure. Use of alternative delivery can create a false sense of reliance that cost containment will exist for the project.
 - Lump Sum: The cost risk associated with ‘scope creep’ is borne by the Contractor except for State directed scope change. Unanticipated escalations in elements of costs are also borne by the Contractor unless special escalation clauses are in the contract. The State must still take the cost risks associated with unusual schedule delays, unforeseen or hazardous conditions, or State directed changes..
 - Guaranteed Maximum Price: If the design requirements are not carefully specified, the State may be responsible for additional costs under a GMP.
- Significant Staff Time. The alternative delivery programming and procurement process requires a significant amount of State and agency staff participation. The contractor will look to the State to have made a number of decisions about program and specification issues and to make other decisions very rapidly during construction.

To conclude the issue of how to make a determination to use a Best Value process, the decision to use an alternative delivery method should be directly related to the attributes of a particular project to be undertaken and the level of design control the State wishes to exercise. Generally, as the desire to control design increases, the appropriateness of alternative delivery methods decreases. Program and performance requirement issues that the State has identified for the project can also affect the decision. It is the combination of project-specific and organization-specific factors that make each construction project unique. An objective assessment of the factors surrounding each project and an understanding of the advantages and disadvantages of alternative delivery systems will allow the State to decide if a different

selection and delivery approach will offer the greatest likelihood of providing quality construction in a timely way at a reasonable cost (i.e. to achieve Best Value).

IV. RECOMMENDATIONS FOR HJR #28: (1) STATE HOW A DECISION IS REACHED TO AWARD A CONTRACT ON THE BASIS OF "BEST VALUE".

- 1. The State and its agencies should be funded for Pre-Design Phase effort on a variety of selected projects through the Long Range Building Program (6-year projection with the 1st and 2nd years making up the current funding requests) in order to establish project parameters, scope, alternatives, schedules, and cost for major, viable projects in the 3rd and 4th year LRBP projections (i.e. those projects that will be requested of the subsequent legislature).**
- 2. At the conclusion of the Pre-Design Phase effort, perform an analysis of the Major Factors identified above which will lead to the selection of an alternative delivery method based upon performance/qualifications as well as price.**
- 3. Should the legislature not permit alternative delivery methods, or performance/qualifications-based selections, then the State should investigate, detail, and define its requirements to perform work in accordance with Montana Supreme Court rulings (i.e. define the requisite ‘judgment, skill, ability, capacity, and integrity’ in order to perform the work) and place such requirements in the bidding documents.**
- 4. Changes to statute will be necessary if alternative delivery methods are to be permitted.**

Establishing Criteria for the Selection Process¹⁸

I. HOW TO ESTABLISH CRITERIA FOR A SELECTION PROCESS

For the purposes of this report, it is necessary to distinguish between the State’s current process, any proposed revision of the low-bid award process, and any alternative delivery method that might become available through modification of statute.

1. The State’s current process:

- i. As previously identified, the method is D-B-B with an award going to the lowest bidder.
- ii. While statute does use the words lowest “responsive” and “responsible” bidder, this has been defined by the Montana Supreme Court and leaves considerable discretion with the public contracting entity entrusted with making such a determination. This is not a negative situation provided such trust is not abused.
- iii. But, this is often not “best value.” It is only a bar set to whatever minimum standard is established in the bidding documents or to whatever level the public contracting entity deems necessary to find the minimally acceptable contractor.
- iv. Although permitted to do otherwise by settled Montana Supreme Court case law, State entities award construction contracts almost exclusively on lowest bid without a determination of whether or not a contractor is “responsible.”

2. A potential, revised State low bid award process that would not affect statute:

It could be recommended that the State utilize and implement the rulings of the Supreme Court that allow the following from *Debcon, Inc. v. City of Glasgow*, 2001 MT 124:

“This Court declared that it was settled law that the phrase ‘lowest responsible bidder’ does not merely mean the lowest bidder whose pecuniary ability to perform the contract is deemed the best, but the bidder who is ‘most likely in regard to skill, ability and integrity to do faithful, conscientious work, and promptly fulfill the contract according to its letter and spirit.’”

¹⁸ Response to HJR #28 request on Line 28 of the resolution: “establish criteria for ensuring a fair, equitable, and objective selection process.”

And, “. . . the Court determined that the term ‘responsible’ did not refer to pecuniary ability only and included ‘judgment, skill, ability, capacity, and integrity;’ and, therefore, contract need not go to the lowest bidder who tendered sufficient bond.”

The question then arises as to how such a determination of responsibility can be performed in a fair, equitable, and objective manner.

3. Setting criteria for use in alternative delivery:

Alternative delivery methods have been used by public entities throughout the nation for a considerable period of time. Organizations such as the Design-Build Institute, Associated General Contractors, American Institute of Architects, and the Construction Owners Association of America to name a few, all recognize methods beyond the low-bid process even for use in the public bidding environment. The federal government has been using such methods for some time and they are becoming increasingly prevalent as an appropriate cost, time, and quality control mechanism. Implementation methodologies have been researched, refined, and practiced in both the public and private sector for many years.

In this report, two main sources are utilized for the purpose of setting criteria: the Montana Department of Transportation’s Design-Build Guidelines (draft as of February 2004) and the Oregon Public Contracting Coalition Design-Build White Paper (February 2002). The actual process will be defined in more detail below.

II. HOW TO ENSURE THE PROCESS IS FAIR, EQUITABLE, AND OBJECTIVE.

Each of the three (3) areas identified above regarding how to establish criteria is defined here in greater detail. The criteria also specify on how to make the process competitive, open, and equitable.

1. The State’s current process: comparing the dollars bid by various contractors is obviously the most objective method. However, this does nothing to indicate that bidders are qualified to perform the work, but only that they were capable of submitting the necessary paperwork. This process has led to the problems previously identified.
2. A potential, revised State low bid award process that would not affect statute: per the rulings of the Montana Supreme Court, the State could very well include performance criteria within its specifications. Criteria inserted in the specifications could include:

- i. Successful completion of similar projects;

- ii. Quality workmanship and management of similar projects;
- iii. Ability to plan, organize, and manage subcontractors;
- iv. Financial capacity to perform the work;
- v. Financial solvency and any performance/payment bond claims;
- vi. Experience of key personnel (project manager, superintendent, etc.);
- vii. Current workload and capacity for additional work;
- viii. Delays and time extensions on past projects;
- ix. Change orders and cost overrun history on past projects;
- x. Safety record or environmental violations;
- xi. Incidents of dispute resolution or litigation;
- xii. Violations of labor standards;
- xiii. Other categories as the State deems appropriate for the type of work under consideration.

These items would be further defined on a per-project basis. Some may complain that this type of criteria remains too subjective and leaves too much discretion in the hands of the public entity. For instance:


- How many projects are needed to demonstrate expertise?
- How many bond claims are acceptable?
- What level of change orders, delays, or disputes are tolerable?
- How many violations of labor standards are allowable?

There are several items to counter this argument:

- The State Supreme Court has already ruled that public contracting entities are entrusted by the public they serve with making such determinations and, absent any bad faith or fraud, such decisions are not to be overturned.
- Why should a contractor with any delays, bond claims, labor violations, disputes, safety problems, etc. be permitted on public work? Shouldn't public work demand a higher standard or is public construction simply a vehicle for economic support of the construction industry?
- There is slight validity in saying this application of the Supreme Court rulings may be slightly subjective: how many projects are necessary to show expertise and responsibility; how experienced do key personnel need to be; or how much financial capacity is essential to perform the work. But, the knowledgeable public entity is capable of making such an informed judgment based upon its needs and the project under consideration.

It cannot be repeated enough that this process still leads to determining the bidder who is the **least or minimally** qualified of the bidders to complete a project rather than awarding to the most qualified. For example, the

following table represents the use of such criteria and how a public entity would award to “Contractor #3” if his price were low.

PERFORMANCE 	Contractor #1 (highest performer) Contractor #2 (high performer) Contractor #3 (minimally qualified) MINIMUM QUALIFICATION CRITERIA LEVEL
	Contractor #4 (unqualified)

While it is possible projects can be completed successfully in this manner, is it really the “best value?” If the bids for Contractors #1 and #2 are within the budget, wouldn’t it make more sense to hire one of them? When hiring personnel, does one desire to hire the most qualified individual for the funds available or the one who passes the lowest standard and is minimally qualified? Why is it that when it comes to public construction, the desire is not to find the best performance within the established budget, but to find the entities who are minimally qualified? If the bid amounts are within the budget, why shouldn’t a public entity be permitted to select the highest performing contractor? Since construction is a complex and arduous process, one should not be surprised with poor quality and delayed completion when selecting the minimally qualified.

Performance-Qualification – the State could implement a “performance-qualification” step to this process (similar to any “two-step” procurement) whereby an analysis of firms permitted to bid is short-listed based upon their performance prior to issuance of the bidding documents. The process could entail the submission of criteria in accordance with the above list. The Performance-Based Studies Research Group based at Arizona State University has established a “Performance Information Procurement System” to measure contractors and would be a good application for state facilities to pursue.

Pre-Qualification – the State could implement a “pre-qualification” step to this process whereby an analysis of firms permitted to bid is short-listed prior to issuance of the bidding documents. The process could entail the submission of criteria in accordance with the above list. There are several third-party entities the State could engage who perform the gathering and categorization of performance and qualification criteria that could be utilized

in order to increase the objectivity and fairness aspects of a “pre-qualification,” two-step process (i.e. must pass the first step of being qualified before being permitted to bid).

For example, an arrangement developed by Advanced Interactive Systems, LLC (called the TOPS-Profile system) can gather, sort, and weigh criteria to determine which firms are qualified to perform work for the State. The process would be something similar to the following:

“When an owner's project becomes available for pre-qualification, organizations (i.e. contractors) that have registered to use the TOPS-Profile system can submit their information. An organization must provide 4 types of information and once entered this information can be saved for up to one year for use in future submissions. The input in each category must be substantiated with written documentation after submittal for a TOPS-Profile score. The four types of information are:

- Project History. Information regarding the performance on previous projects. The system seeks projects of the same type, then of the same size, and finally of the same budget/schedule.
- Project Capacity. Financial information is sought to determine the organization's bonding capacity, assets/liability status, and insurance capacities.
- Strategic Management. This section of the input looks at long-term corporate business strategies.
- Critical Success Factors. Finally, the short term corporate activities are queried.

The combination of the project history and project capacity provides input about prior success of an organization. The combination of the strategic management and critical success factors provides an indicator of future success for the organization. Upon submitting this information for a TOPS-Profile, the organization receives information about their performance in each of the four areas and the combined score as determined by the owner's weights. Thus, immediately, an organization knows if they have pre-qualified, subject to verification of the submitted information.” – From AIS TOPS website, copyright 2001-2004, Advanced Interactive Systems, LLC

Use of systems such as the ones described above can remove concerns and accusations of subjective decision-making on the part of the public entity and yet it can fully comply with the term “responsible bidder” provided in statute, 18-1-102(1)(a) MCA, as well as support the definition of the same provided by the MT Supreme Court. Used appropriately, data gathering and use of information measurement appears to eliminate much of the need for decision-making by providing clear results of who performs and who does

not. If the data are clear, what decision is there to be made other than to proceed with the firms who are clearly the performers?

3. Setting criteria for use in alternative delivery:

The same criteria listed above could be used in alternative delivery except that price would not necessarily be the primary, driving factor. Performance would be a large part of the evaluation for award. This process could be done under any delivery method (D-B-B, D-B, or GM/GC).

Typically, the information a responder will need to determine the project's appropriateness for his/her firm, and the design expertise required to compete for the contract is more than can conveniently be communicated in a Request For Qualifications (RFQ) document. The RFQ document is taken after the Pre-Design Phase has established the project parameters and after the decision is made to go other than low-bid. The RFQ is developed and then published separately and distributed to interested parties, with a record kept of all such RFQ holders. The latter is to judge the level of interest in the project (competition), and to have the ability to amend the document or to distribute additional information (Q&A). Interested firms will be required to submit their qualifications to the Selection Panel in order to determine those with the necessary team members, experience, etc. necessary to undertake a particular project.

- a. The Request For Qualifications should contain the following items:
- Description of Project and Scope (developed during Pre-Design or through Programming and Schematic design effort)
 - Project Type & Size
 - Estimated Contract Cost Range
 - Desired Project Schedule
 - Type of Competition (i.e. cost only; qualifications only; or, a combination of qualifications/cost)
 - Outline of the Selection Process
 - Key Dates in Proposal Process
 - Pre-Submittal Conference
 - Communications with Agency (how Q&A are handled)
 - Number of Qualified Finalists to be given the RFP (no less than 3)
 - Honoraria
 - RFP Requirements
 - Summary of RFP Selection Criteria
 - Basis of Award
 - Identification of Selection Panel Members
 - Bonding, Wage Rates, and Licensing Requirements
 - Other Mandatory Requirements (e.g. Insurance)
 - Submittal Requirements
 - Submittal Deadline

- Qualification Selection Criteria:
 - Past performance criteria
 - Successful completion of similar projects;
 - Quality workmanship and management of similar projects;
 - Ability to plan, organize, and manage subcontractors;
 - Financial capacity to perform the work;
 - Financial solvency and any performance/payment bond claims;
 - Experience of key personnel (project manager, superintendent, etc.);
 - Current workload and capacity for additional work;
 - Delays and time extensions on past projects;
 - Change orders and cost overrun history on past projects;
 - Safety record or environmental violations;
 - Incidents of dispute resolution or litigation;
 - Violations of labor standards;
 - Other categories as the State deems appropriate for the type of work under consideration.

This is the first stage to determining those who are qualified on a performance basis. This common selection method is the two-phased approach - one that initially requests qualification statements from any interested firms and secondly, requests proposals from qualified firms identified in the initial phase. Most projects are best served by limiting the number of responders to a selected few, typically three to five, because of the cost and complexity of preparing a proposal and the need to encourage a high level of competition. This two-step process can be used in any of the three delivery options defined in this report.

The appointed selection panel has the task of evaluating qualification statements and recommending a “short-list” of the best-qualified teams of design professionals and contractors. Staff, consultants and other technical advisors may assist them. The evaluations are limited to the qualification selection criteria listed in the RFQ. The number of finalists is likewise limited to the range stated in the RFQ who are then given the RFP. Evaluating the firms and reducing the number to the most qualified in the RFQ step eliminates the need to perform the same function during the RFP process.

Evaluation Process – There may be other criteria, unique to the proposed project that warrants inclusion in the initial evaluation that is not listed above. The Selection Panel and Technical Review Panel (TRP) may take one of several approaches to reach a short list. The short list should be a list with the preferred ranking of firms eligible to receive the RFP. The list should have a summary of strengths and/or

weaknesses of each firm. Some processes that may be used include: (1) Matrix ranking giving categories equal weighting; (2) Matrix ranking giving categories with unequal weighting; (3) Individual ranking, group discussion and group ranking; or, (4) Group discussion, individual ranking, most top rankings win. The following should be employed to develop the RFQ evaluation process:

- i. The Selection Panel should determine the methodology they will employ in the selection process and the criteria they will use and incorporate that information into the RFQ. Non-voting technical advisors may also be used for needed expertise.
- ii. Check all evaluation categories to make sure minimum qualifications are met for the category.
- iii. The Selection Panel's members (and any TRP) will individual evaluate the relative merits of each firm using any logical method that can be justified. The end result of this evaluation process will be a list that ranks each firm starting with the strongest firm and ending with weakest firm.
- iv. The rankings of all members will be put in numerical order with the firm that has the lowest numerical value ranked first.
- v. The Panel, as a group, will establish a written list of strengths and weaknesses for each firm in order to justify the firms' final rankings.

Evaluation Methods – The following are detailed explanations of four methods that have been used in conducting evaluations for short listing:

- i. Matrix Ranking Giving Categories Equal Weight
 1. Develop a matrix using the aforementioned criteria.
 2. Rank each firm by criteria on a 1 to 10 scale, with 10 being best. If done individually by panel members, average the individual grades by criteria and per firm.
 3. Sum up the averaged criteria by firm, highest scores win.
- ii. Matrix Ranking Giving Categories Un-Equal Weight
 1. Develop a matrix using the aforementioned criteria and determine the weight to give each criterion.
 2. Rank each firm by criteria on a 1 to 10 scale (or similar point scale), with 10 being best. If done by individual members, average the individual grades by criteria and per firm.
 3. Apply the pre-determined weight to all criteria.
 4. Sum up the averaged and weighted criteria by firm, highest scores win.

- iii. Individual Ranking, Group Discussion, Group Ranking
 - 1. Prior to getting together as a group using the aforementioned criteria, each panel member ranks the firms 1 through the number of responses received.
 - 2. The entire group discusses the strengths and weaknesses of each firm.
 - 3. The firms are then ranked by the entire group.
 - iv. Group Discussion, Individual Ranking, Most Top Rankings Win
 - 1. Group discussion of strengths and weaknesses of all firms using the aforementioned criteria.
 - 2. Individual members rank all firms from 1 thru the number of responses received. Average the individual rankings.
 - 3. The firm with the lowest average is the top ranked firm for the short list.
- b. The Request For Proposals should contain the following items:
 - ***Proposal Requirements:***
 - Identification of Agency, Consultants, Selection Committee & Design-Build Teams
 - Instructions to Proposers
 - Eligibility & Honoraria
 - Communications
 - Pre-Proposal Conference(s)
 - Competition Schedule
 - Proposal Form
 - Alternates (if any)
 - Proposal Exhibits (drawings & specs to be provided)
 - Presentations
 - Disqualification
 - Weighted Selection Criteria
 - Scoring & Selection Process
 - Basis of Award
 - Information Provided by Agency
 - ***Contract Requirements:***
 - General Conditions of the Contract
 - Supplementary Conditions of the Contract
 - Agreement & Bond Forms
 - Sample Project Administration Forms
 - ***Program Requirements:***
 - Tabulation of Space Requirements
 - Environmental Requirements
 - Proximity Diagrams
 - Technical Specifications
 - Design Drawings

- **Performance Requirements:**
 - Performance Specifications
 - Bridging Documents
 - Quality Control Plan
 - Mobilization Plan
 - Logistics Plan
 - Demobilization Plan
- **Information Provided by Owner:**
 - Maps, Surveys
 - Geotechnical Report
- **Other Requirements:**
 - Social-Economic Program Requirements
 - Wage Rate Requirements

Proposal Requirements – Similar to Instructions to Bidders in conventional bid documents, the proposal requirements specify how the proposal phase of the solicitation will be conducted, and how the proposals will be compared and evaluated including specific evaluation criteria and the scoring process.

Program Requirements – The requirements will vary depending upon the type of project, the level of design performed for the proposal, and which of the three delivery methods is employed (D-B-B, D-B, GC/CM).

- i. If the State is using the traditional D-B-B process, the selection is for a Contractor only and is based on some combination of performance and price or performance only.
- ii. For D-B, the State must perform some level of design (between 15% and 50%) in order to define its program requirements, determine the level of design control desired for the overall final result, and the level of quality needed. The amount of design requirement documentation should be kept to a minimum to give bidders the maximum flexibility to pursue their unique approaches to technical superiority and cost minimization.
- iii. For GC/CM, the amount of program information is minimal as the CM should be in the process early to assist with design.

Performance Requirements – Other than the D-B-B process, performance specifications describe the State's expectations for the technical performance of all project components. The level of detail may vary widely depending on the nature of the project and potential proposer. The proposers guarantee they will design and construct a project that will perform as specified after it is accepted and occupied or put into service and throughout the warranty period.

Contract Requirements – This section includes the General Conditions of the Contract, any Supplementary General Conditions, Agreement Form, Bond Forms, and required program elements (e.g. wage rates, 50% worker requirement, etc.).

- c. Receipt and Evaluation of Proposals – proposals are evaluated by the selection panel on the basis of the established criteria which include:
- Design professional, Image, and Character (Building Project)
 - Technical Innovation and Environmental Acceptability of the Engineered Solution (Engineering or Architectural Project)
 - Quality Control Plan
 - Functional Efficiency and Flexibility
 - Quality of Materials and Systems
 - Socio-Economic Programs
 - Disruption To Ongoing Activities
 - Quantity of Usable Floor Area
 - Convenient Disabled Access
 - Safety and Security
 - Energy Conservation and Environmental Sustainability
 - Operation and Maintenance Costs
 - Life-Cycle Cost
 - Completion Schedule
 - Cost/Value Comparison

Technical Evaluation – Proposals not meeting the minimum requirements identified in the Request document must be deemed non-responsive and not considered for the project. Some RFPs limit the amount and types of proposal exhibits that can be submitted in addition to the minimum submittal requirements. This is done to focus the responses and assure an equitable and manageable selection process. Scoring of the proposals must be documented and available to the public. Depending on the degree of complexity, proposals should be evaluated by appropriately skilled and experienced technical staff members and consultants in addition to any agency participation. Specialized technical evaluators can also be used who would typically limit their evaluations to their own individual areas of expertise and often prepare written technical assessments and report their findings to the selection panel. There may be other criteria, unique to the proposed project that warrants inclusion in the initial evaluation that is not listed above. The Technical Review Panel (TRP) should recognize this when developing the RFQ and RFP.

The Department intends to request proposals from no fewer than three firms. Those requested to develop and submit proposals will

be based upon the RFP and segmented into two parts, Technical Proposals and Price Proposals submitted in separate packages (with the price proposal sealed) and appropriately labeled.

The Selection Panel will then forward the Technical Proposals to the TRP and hold all sealed Price Proposals until Technical Proposal scores are provided. Technical Proposals should include all information identified above other than the price. Price Proposals will include all pricing information requested in the RFP.

Technical Evaluation Methods – The same scoring/ranking methodology used for the RFQ stage can be utilized for the RFP stage as the criteria will have been altered according to more project specific factors. However, the Cost/Value Comparison must also be performed in order to recommend an award. The technique is repeated here for ease of reference:

- i. Matrix Ranking Giving Categories Equal Weight
 1. Develop a matrix using the aforementioned criteria.
 2. Rank each firm by criteria on a 1 to 10 scale, with 10 being best. If done individually by panel members, average the individual grades by criteria and per firm.
 3. Sum up the averaged criteria by firm.
- ii. Matrix Ranking Giving Categories Un-Equal Weight
 1. Develop a matrix using the aforementioned criteria and determine the weight to give each criterion.
 2. Rank each firm by criteria on a 1 to 10 scale, with 10 being best. If done by individual members, average the individual grades by criteria and per firm.
 3. Apply the pre-determined weight to all criteria.
 4. Sum up the averaged and weighted criteria by firm.
- iii. Individual Ranking, Group Discussion, Group Ranking
 1. Prior to getting together as a group using the aforementioned criteria, each panel member ranks the firms 1 thru the number of responses received.
 2. The entire group discusses the strengths and weaknesses of each firm.
 3. The firms are then ranked by the entire group.

- iv. Group Discussion, Individual Ranking, Most Top Rankings Win
 - 1. Group discussion of strengths and weaknesses of all firms using the aforementioned criteria.
 - 2. Individual members rank all firms from 1 thru the number of responses received. Average the individual rankings.
 - 3. The firm with the lowest average is the top ranked firm for the short list.

Cost/Value Evaluation Methods – The cost/value evaluation and price analysis should be performed in accordance with RFP requirements which will result in the best value to the State. The methods available for determining competitiveness of price by using Weighted Criteria, Stipulated Sum/Best Value, Adjusted Low Bid, Equivalent Design/Low Bid, or Meets Criteria/Low Bid.

- i. Cost/Technical Trade-off - A "Cost/Technical Trade-Off" is where proposal technical evaluations and scores are compared to proposal prices. If discussions or negotiations are to be held, a "competitive range" of the offers having a reasonable chance of selection that fall within the budget should be established. Offers determined not to be in the competitive range are notified in writing and excluded from further consideration. Statute currently allows negotiations with a low bidder for no more than 7% deductive changes. This should not be the limit when considering alternative delivery methods or selection of a construction contractor on the basis of performance and quality in addition to price.
- ii. Conduct Negotiations/Discussions With Offerors - It is almost inconceivable that the State will not get a better project by conducting negotiations. Negotiations/discussions should be held with all offerors with regard to technical criteria or technical aspects of their proposal. All negotiations must be in the form of questions or requests for clarifications and not by alterations to the RFP in order to maintain fairness. Negotiations must not be used to determine any special items provided by the proposers not formally requested in the RFP or in requesting changes to the proposal until after award of the project. Such changes after award would be considered change orders. Negotiations and discussions with regard to price are conducted only if all offers are above the previously established allowable project costs. Negotiations are not mandatory nor is it compulsory to make a demand for Best and Final Offers unless clarifications or changes to the proposals have been requested.

Clarifications – In the process of evaluation, the procedure may allow questions and ambiguities to be resolved by the proposers. The process of requesting and receiving proposal clarifications should be in writing with specific deadlines for responses. Proposers’ clarifications may be included in the contract documents. However, changes of scope or price should not be accepted in the clarification process. These matters are best addressed through Best and Final Offers (BAFO) or during contract negotiations.

Presentations – Except for the simplest projects, it is appropriate to allow the finalists an opportunity to present their proposals to the selection panel and respond directly to the selection panel’s questions. Any statement or response that is significant and material to the proposal may need to be clarified in writing by the proposer prior to the selection panel’s final deliberations.

Best and Final Offers – Following discussions or formal interviews with proposers, Best and Final Offers (BAFOs) may be requested. Finalists are allowed an opportunity to submit their best prices and/or technical responses in reply to the State’s request. In effect, this step levels the playing field by allowing finalists an opportunity to provide their BAFO after interviews have been conducted. In calling for BAFOs, the State may elect to issue a final set of instructions, including any decisions made during the course of discussions and assumptions that proposers should make in submitting BAFOs. In this process, the agency may suggest areas that proposers would want to consider in submitting a BAFO (including clarifications and changes), but the decision on structuring offers is still left with proposers.

Selection Panel Deliberations and Recommendation of Award - After the selection panel has completed the information gathering and evaluation process outlined in the solicitation documents, they typically meet to discuss the proposals among themselves and arrive at a recommendation. There is no limit to the aspects of the proposals that selection panels may discuss, but the selection panel’s individual scorings that determine the successful proposal are limited to the Weighted Selection Criteria listed in the RFP. The highest scoring proposal is the only proposal that the selection panel would normally recommend for award. Alternatively, they may recommend no award, or an award to the highest scoring proposal subject to specific conditions of acceptance of the proposal. It is recommended that records of individual scores, along with the technical evaluation reports, be available for examination by the

proposers, but typically only after the State acts on the selection panel's recommendation.

- d. Honoraria/Stipends – The cost for assembling proposals can be very large. Therefore, the Department intends to compensate the unsuccessful short-listed firms for submitting a D-B or GC/CM proposals. In order to do so, the Department will list in the RFQ the amount of the honorarium or stipend to be paid for short-listed firms. Any firm participating in the short-list will have agreed to this amount upon submission of their proposal in the RFP stage. The honoraria/stipend is not intended to compensate the firms for the total cost of preparing the proposal package. The Department will reserve the right to use any of the concepts or ideas within the technical proposals as it deems appropriate.
- e. Performance and qualification measurement systems as identified under #2 above can also be used to save time and effort in the RFQ and RFP evaluation aspects of an alternative delivery process.

III. RECOMMENDATIONS FOR HJR #28: HOW TO “(2) ESTABLISH CRITERIA FOR ENSURING A FAIR, EQUITABLE, AND OBJECTIVE SELECTION PROCESS.”

- 1. Absent the ability to use alternative delivery method (D-B or CM @ Risk), it is put forward that the State adopt a “qualifications” outline to be placed in the specifications for use in evaluating whether or not bidders meet the definition of “responsible.” Additionally, the use of performance criteria in a functioning two-step process could be implemented.**
- 2. If alternative delivery is to be permitted through a change in statute, the State should utilize the above established guidelines for development of RFQ and RFP criteria. Evaluations must be conducted in a formally scored process with the results made available to the public.**

Qualifications for Selection Panels¹⁹

I. THE FUNCTION OF THE SELECTION PANELS

As part of the solicitation process, the Department of Administration (A&E Division) would appoint a selection panel which is normally six to twelve but can be more. It is recommended that selection panel members be knowledgeable about the project requirements including design and construction aspects. They may represent the various stakeholders associated with the project, including the agency’s senior management, facility users, design professionals, and possibly a construction industry representative. Disclosures of conflicts of interest are recommended. There are two philosophies regarding identification of selection panel members in the RFQ. The Department should evaluate whether: naming the selection panel would alleviate the problem of identifying with whom proposers can and cannot discuss issues relevant to the project; or naming the selection panel would allow proposers an advantage by writing the proposal to a specific panel member's personality or expertise. At a minimum, the RFQ should list the functional responsibilities of the panel members in their regular employment. The RFQ should specify whether or not the selection panel will be the same as for the RFP process.

The selection panel members should then establish a Technical Review Panel (TRP) who will evaluate both the RFQ and RFP from a technical standpoint and advise the Selection Panel in a non-voting capacity. The Selection Panel and the TRP can be the same members if they are technically qualified to perform the evaluation functions. The TRP evaluates the technical proposals and submits its findings to the Selection Panel, the Selection Panel reviews the TRP findings and the Price Proposals, makes a final selection, and submits a recommendation for award to the Department.

II. THE COMPONENTS OF THE SELECTION PANELS

As a minimum, the Selection Panel should be comprised of:

- Administrator of the Architecture & Engineering (A&E) Division
- A&E Division’s Project Manager
- A&E Division’s Construction Manager
- Dept. of Administration Legal Counsel
- Agency’s Facilities Representative
- Design Firm who helped prepare the Plans & Specifications or RFQ/RFP documents

¹⁹ Response to HJR #28 request on Line 29 of the resolution: “determine qualifications for members of selection panels used to award contracts;”

- Other agency stakeholders.
- Those holding any elected or appointed political office should NOT be part of any selection panel.

The main responsibilities of the Selection Panel are to review the responses to the RFQ to form short-listed firms and to review the RFP along with the TRP’s findings in order to recommend award to the winning firm.

The TRP could be comprised of the following members:

- A&E Division’s Project Manager
- A&E Division’s Construction Manager
- Agency’s Facilities Representative
- Design Firm who helped prepare the Plans & Specifications or RFQ/RFP documents
- Possible representative of the Construction Industry
- Architectural and Engineering support as defined by the needs of the project, nature of the work requested, complexity of the project, and availability of personnel for a timely selection.

III. INSTRUCTIONS TO THE SELECTION PANEL AND TRP

Instructions for the selection and technical evaluation teams have three basic elements: preparation of instructional documentation for the specific project; preparation of technical, quality rating, and evaluation summary forms; and, guidance on how to conduct the meeting. The instructions include, but are not limited to, the following material:

- A brief description of the evaluation process.
- An explanation that the proposal material, evaluation proceedings, and evaluation results are confidential and shall not be disclosed outside the evaluation team.
- A description of the major evaluation factors/sub-factors and the relative weight placed on each for this project.
- An explanation of the quality value rating scoring scheme and instructions for rating proposals.
- Instructions for using the forms and keeping the documentation.

The evaluation process should involve the appropriate personnel and strictly follow the criteria established for the specific project, including all documentation. This helps to assure that evaluations are fair, impartial, and objective.

IV. RECOMMENDATIONS FOR HJR #28: HOW TO “(3) DETERMINE QUALIFICATIONS FOR MEMBERS OF SELECTION PANELS USED TO AWARD CONTRACTS”

- 1. Use members experienced in design and/or construction as listed above.**
- 2. Define a sufficient number of knowledgeable members for each project and try to maintain the same individuals throughout the selection process.**

Getting the Most Cost-Effective Project²⁰

I. WHAT IS A COST-EFFECTIVE PROJECT?

Certainly being within budget is often the primary aspect of defining whether or not a project is cost-effective. However, it is significant to note how State project budgets are established (previously outlined in this report and discussed further below) that provides a foundation for determining cost-effectiveness.

1. The type of project being constructed must first have all defining characteristics identified in order to properly utilize industry data and price comparisons from around the country for similar facilities. The functions of interior spaces and facility operations must be determined in order to define the type of project (e.g. chemistry lab spaces, library, equipment storage, etc.). These functions are categorized and cost estimates should be updated throughout the design process.
2. In the preliminary stages of design, estimates are done on a cost “per square foot” basis using data gathered from past projects and others of similar type throughout the region. As the design is refined into construction documents, the estimate is refined on a “unit cost” of the items going into the building. As can be seen, the type of project being built is the driving factor in the comparison process. For instance, if other states are constructing laboratories for around \$200 per square foot and Montana builds one for \$180 per square foot we would conclude on the surface that we were “cost effective.” But, this would not truly be the case. Such a shallow conclusion is not an apples-to-apples comparison as it doesn’t consider every space in the building (i.e. number of labs, type of equipment installed, mechanical systems, interior finishes, external fascia components, life-cycle costs, operational costs over time, etc.). At best, it is an approximation. At worst, it is unreliable and inconclusive. As mentioned previously in this report, design and construction costs account for only 20% to 40% of the Total Life Cycle Cost of a facility (this range is dependent upon the type of project constructed).
3. Is it cost-effective to rapidly construct something out of the cheapest materials available and then spend huge amounts for operations and maintenance over the next 30 to 50 years of a building’s useful life? Or, is it more cost-effective to construct things from the most durable materials affordable and the most energy-efficient systems available? Clearly, cost-effectiveness is a relative term: relative to each and every project in each and every location.

²⁰ Response to HJR #28 request on Line 30 of the resolution: establish a process ensuring that taxpayers receive the most cost-effective project possible.”

4. For the purposes of this report, cost-effectiveness will be defined in terms of getting the most for dollars authorized and not based solely on awarding a low-bid project (though that will be discussed herein below as it is a large part of the process).

II. HOW STATE BUDGETS ARE ESTABLISHED FOR PROJECTS.

1. The Long Range Building Program (LRBP) was initiated in 1965 to provide funding for construction and maintenance of state buildings. The program was developed in order to present a single, comprehensive, and prioritized plan to allocate state resources for the purpose of capital construction and maintenance of state-owned buildings. State agencies request funding for construction through the LRBP which are initially entered by the agencies into the SABHRS/MBARS Capital Projects Module that also establishes an agency priority for proposed projects. The A&E Division reviews all agency requests and establishes a statewide priority for the proposed projects. The A&E Division priority listing of LRBP proposed projects is then recommended to the Governor for inclusion in the budget requests for the next Biennium. The building program of the Governor's Budget is then presented to the Legislature for approval in House Bill #5 for the cash portion and (typically) House Bill #14 for the bonded portion.
2. As agencies submit their requests, the A&E Division reviews the project description, cost estimates, and inspects the requested projects for confirmation of the information submitted by the agencies.
 - i. However, the projects have typically NOT been through any level of Pre-Design and are a best guess of what the costs are based upon national averages, an agency's experience, or in some cases, the quotes of a local contractor. The latter two have a significant impact on what actually is constructed when funding becomes available.
 - ii. Agencies with a facilities staff (e.g. the Montana University System) can assemble requests that directly reflect the needs of the institution or agency and are more accurate. Often an agency will spend some of its own internal funding to hire a consultant to assemble some project data and perform a portion of programming and planning in order to better understand their needs prior to requesting funding in the LRBP.
 - iii. The Department of Military Affairs performs a detailed level of Pre-Design as part of its mandate from the Federal National Guard Bureau which is reflected in its Form DD1390/1391. This form reflects the functions to be built within a facility in great detail even to the point of establishing the allowable square footage for type of space, allowable area of paving, sidewalk, etc. This document is then used by the designer as its sole guide for the building. It also helps the Department maintain cost control.

3. After approval by the Legislature, project budgets are established and the spending authorities cannot be adjusted without consent of the OBPP (Office of Budget and Program Planning). Transferring funds from one project to another is also prohibited. Agencies then must construct a project within the amounts approved for that particular project. This is why preliminary programming and planning or some level of Pre-Design phase is so critical: to get the requested amount right the first time so all needs can be met rather than trimming needs to meet the approved funding.

III. HOW STATE PROJECT BUDGETS ARE USED THROUGHOUT THE DESIGN AND CONSTRUCTION PROCESS.

The Long Range Building Program book (e.g. typically Volume 3 of the Governor’s Budget as submitted to the Legislature) breaks down the estimated costs for a project into the following: land acquisition; site investigation; consultant services; construction costs; site development; utilities; telecomm; furnishings & equipment; contingency; Division supervisory fees; construction management; commissioning; construction testing; percent for the arts; and, other. The book also lists each of the funding sources applicable to individual projects.

Once a project is approved, a more detailed budget is developed by the Division. Without going through all of the essential steps to accomplish each item budgeted from the approved funding, a simple outline of the typical project expenditures experienced is provided below:

1. Design Costs (broken into three categories):
 - i. Basic Services (production of the design) –
 - a. Schematic Design Phase
 - b. Design Development Phase
 - c. Construction Documents Phase
 - d. Bidding Phase
 - e. Construction Administration Phase
 - ii. Additional Services (services outside of production) –
 - a. Programming/Planning
 - b. Specialty Consultants
 - c. Site Survey
 - d. Geotechnical Report
 - e. Document Reproduction
 - f. Record Drawings
 - g. Warranty Inspections
 - h. Reimbursable Expenses
 - iii. Supplemental Services (some typical items listed) –

- a. Cost/Feasibility Studies
- b. Value Engineering
- c. Funding/Grant Document Production
- d. Fund-Raising Assistance

2. Agency Costs (some typical items listed):

- i. Furnishings
- ii. Technical Equipment
- iii. Voice/Data/Fiber Optics Allowance
- iv. Moving Expenses
- v. Final Hook-ups
- vi. Facilities Office Support
- vii. Utilities & Agency work orders

3. Construction-Related Costs (some typical items listed):

- i. On-Site Construction Observation
- ii. Advertising
- iii. Plan Review and Permit Fees
- iv. Materials Testing and Inspection
- v. Commissioning
- vi. Artwork
- vii. Utilities
- viii. Miscellaneous
- ix. Supervisory Fee (for non-LRBP funds)

4. Construction Cost (i.e. Hard Cost) – the actual building!

The first three items are typically called “Soft Costs” as they are the functions and items that are necessary to a project but are not “bricks and mortar.” Soft Costs can be as much as 25% to 35% of a project’s total budget. The more complex a building, the higher the percentage of soft costs expended. For instance, should the Legislature provide \$10,000,000 for a new laboratory building, roughly \$3,500,000 will go toward services and items that are not hard materials or building components. If the facility is, say, \$150/square foot, the completed facility would be approximately 43,000 square feet.

The construction budget is continually modified throughout the design process by adjusting the needs of the agency and facility to fit within the established construction hard-cost budget amount. In short, once the legislature has appropriated funds, the money becomes the driving factor for all decisions made on a project rather than the needs of the agency or the time it will take to construct.

Given the current method of funding authorization and the procurement system of D-B-B awarded to the lowest-bidder, the following goals would define “cost-effectiveness”:

- Procure the most proficient design services available and manage the design process closely in order to define the project parameters within the funds available.
- Perform trade-offs during the design process between quality, cost, time, and needs of the agency to make sure the project remains within the funds available.
- Bid and award to the lowest price regardless of qualifications.
- Manage and inspect the contractor (further using project funds) to make sure the trade-offs requested in the design documents are performed to meet the minimum standard established.
- Maintain a sufficient contingency throughout the project, but especially at award, to cover change orders and possible disputes.

It isn’t difficult to observe how the above is quite inefficient and unproductive – inefficient in how funds are delivered to soft costs rather than “bricks and mortar” and unproductive in the amount of time and effort expended to define the project and then manage/inspect the construction of it.

Therefore, it is proposed that the most cost-effective and efficient project would be where funding is maximized in the direction of hard costs and a high performing/qualified contractor is hired that requires minimal oversight. But, this is rarely the case when dealing with low-bid D-B-B.

From Dr. Dean Kashiwagi: “The motivation for performance comes directly from the contractor and not the process itself.” And, “. . . this motivation cannot come from a process or through management . . . Any process that tries to motivate individuals to perform instead of **finding individuals who perform** will be less successful in delivering performance.”²¹ (emphasis added)

It is unreasonable to expect that a low-bid environment with contracts based upon adversarial enforcement will be efficient and cost-effective in the long-term or from a holistic perspective. Why not find and hire performance within the available budget thereby reducing the need for over such detail in design and oversight during construction?

IV. SELECTION OF THE MOST QUALIFIED, BEST PERFORMING CONTRACTOR LEADS TO THE MOST COST-EFFECTIVE, BEST-VALUE POSSIBLE.

²¹ “Best Value Procurement”, pgs 5-2 to 5-4, 2002, Performance Based Studies Research Group, Arizona State University.

A cost-effective project for the State then is one that delivers the following on the following variables as determined by the individual project and agency:

- All work is accomplished within budget;
- All work is completed early or on schedule;
- All agency criteria for the facility are met, constructed, and operational;
- State utility, operational, and maintenance costs are minimized for the type of building constructed;
- Use of most efficient, durable materials and systems are maximized;
- The Total Life Cycle Cost is minimized; and,
- The best quality construction and contractor performance are received.

The delivery method used should not be at issue since any of them can be effective ***IF*** the selection process involves finding those contractors who really perform rather than trying to make the non-performers achieve through enforcement.

Use of performance and/or qualification criteria should be implemented in all three (3) delivery methods mentioned above. However, its use should be consistent, fair, objective, and open in the bidding and determination process so that all bidders and the public can be assured that responsible findings are reached by public entities.

V. RECOMMENDATIONS FOR HJR #28: HOW TO “(4) ESTABLISH A PROCESS ENSURING THAT TAXPAYERS RECEIVE THE MOST COST-EFFECTIVE PROJECT POSSIBLE.”

- 1. Select the most qualified, best performing design team to develop documents as appropriate for the delivery method chosen:**
 - a. Low-Bid - full plans and specifications for D-B-B.**
 - b. Two-Step Qualified Low-Bid – request for qualifications (RFQ) package to assist in short-listing contractors and then full plans and specifications for a low-bid D-B-B from the short-list with price as the sole criteria.**
 - c. Two-Step Qualification-Base Bid – request for qualifications (RFQ) package to assist in short-listing contractors and then full plans and specifications for a qualification-based only selection from the short-list with price as a factor but not the sole criteria.**

- d. Two-Step Design-Build – RFQ and RFP packages and assistance in scoring. Method can be used as either low-bid or qualification/performance-based selection.**
- 2. Select the most qualified, best performing contractor through the guidelines identified in this report regardless of the delivery method chosen:**
 - a. Exception is Low-Bid only in many instances. The State anticipates it would continue doing a considerable number of projects by its current process even if a qualification/performance-based process is defined in statute and if alternative delivery methods are made available.**
 - b. Two-Step Qualified Low-Bid.**
 - c. Two-Step Qualification-Base Bid.**
 - d. Two-Step Design-Build.**

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Appendices

APPENDIX A – HJR #28

2003 Montana Legislature

[About Bill -- Links](#)



HOUSE JOINT RESOLUTION NO. 28

INTRODUCED BY LANGE, HAINES

A JOINT RESOLUTION OF THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA ENCOURAGING THE DEPARTMENT OF ADMINISTRATION TO INITIATE A COLLABORATIVE STUDY CONCERNING THE PROCESS AND CRITERIA FOR STATE AGENCIES TO USE IN AWARDING PUBLIC WORKS CONSTRUCTION CONTRACTS.

WHEREAS, awarding public works construction contracts to the "lowest responsible bidder" has been standard practice for the State of Montana for decades; and

WHEREAS, various public entities have, in recent years, attempted to award contracts for construction using various alternative project delivery systems, such as "design-build", "construction manager at risk", and other derivatives of these methods, leading to conflicts among the construction industry, and the architecture and engineering professions; and

WHEREAS, governing statutes relating to the award of public works construction contracts have been interpreted in widely divergent ways by various stakeholders and by the courts; and

WHEREAS, public owners, including the Department of Administration, have proposed at various times to amend the law to allow construction contracts to be awarded on a "best value" basis, but stakeholders have not been able to reconcile differences on the approach.

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA:

That the Department of Administration is encouraged to initiate a collaborative study that should result in recommendations to the 2005 Legislature concerning the applicability, procedures, and criteria for state agencies to use in awarding public works construction contracts. The recommendations should:

- (1) state how a decision is reached to award a contract on the basis of "best value";
- (2) establish criteria for ensuring a fair, equitable, and objective selection process;
- (3) determine qualifications for members of selection panels used to award contracts; and
- (4) establish a process ensuring that taxpayers receive the most cost-effective project possible.

BE IT FURTHER RESOLVED, that the collaborative study should involve representatives of the Department of Administration, the construction industry, the architecture and engineering professions, the surety industry, and any other stakeholders that the Department determines necessary.

- END -

APPENDIX B – DEVELOPING RFP SPECIFICATIONS

Note: these pertain primarily to the technical portions of the Request. Additional items are to be included as identified earlier in this report under “Establishing Criteria for the Selection Process.”

I. GENERAL

- a. A primary objective of alternative delivery methods (Design-Build in particular) is to allow the construction industry to propose a variety of design and technical solutions for a given facility requirement. To be consistent with this objective, the technical specifications for the facility must allow the widest practical range of designs and construction methods and materials while at the same time ensuring the quality levels are met. Thus, a performance-oriented specification method is necessary to describe the facility's architectural, engineering and technical requirements in the RFP.
- b. Conventional prescriptive specifications (i.e. D-B-B) indicate a single design and technical solution are desired and therefore are inappropriate for exclusive use in an alternative delivery method contract. The content and composition of the technical specifications depend on the requirements and conditions of each specific project.
- c. A combination of performance and prescriptive specifications may be appropriate in an alternative delivery method contract especially where technical or functional requirements necessitate a mixture of dictating (prescribing) a solution in the RFP plus allowing a variety of solutions to a fully described performance requirement. The more an RFP is developed to contain actual design drawings and specifications stating actual material and method of construction the more the project becomes prescriptive. Prescriptive specifications should be avoided except in those instances where the State has a specific need for a specific item.
- d. A fully defined description of functional and technical requirements of a project will ensure a quality and cost effective facility. To achieve the goal of covering all the functional and technical requirements use of the Construction Specification Institute (CSI) Division 16 format is encouraged as its use as an outline will ensure that the project is fully defined.

II. PERFORMANCE-ORIENTED SPECIFICATIONS.

- a. "Performance" specifications set requirements to achieve a desired result but not the specific means or item. Features desired must be delineated completely and clearly, measurable or observable criteria must be established, conformance to criteria must be verifiable, and the specification must be free from unnecessary material and process limitations. In practical terms, however, it is unlikely that all items of a project can be specified adequately in pure performance terms alone.
- b. Performance-oriented specifications are appropriate for a D-B RFP. The specifications will need to contain both performance and prescriptive requirements in order to define the parameters, quality, and function desired.

The emphasis of the specification is placed on the performance requirements whenever possible. Prescriptive requirements are included when developing performance requirements is impractical for the specific application, or when only one prescribed solution is appropriate.

III. LEVEL OF CONTROL

- a. When technical specifications are performance-oriented many elements of final design and material/systems selections are delegated proposer who is to state during the RFP process what will be done during construction. However, the specifications should not be "wide open" without controls for adequacy and quality. The Owner (i.e. State) can exercise varying degrees of control over the proposed design and construction solutions through the specific project requirements.
- b. When advantageous for the project to maximize the potential options available to proposers, the State should allow greater latitude in proposing design and technical solutions. This latitude is offered by specifying building elements in mainly performance terms and minimizing constraints on the configuration, materials, and methods. A specification for "structure," for example, would include loading, seismic, fire safety, and other fundamental performance criteria. Performance requirements are qualified by prescriptive criteria only to the extent necessary, such as by design standards for each structural approach. Any variety of steel frame, concrete, pre-cast, load-bearing masonry, or other structural configurations could comply. The proposer is then responsible for selecting the structural materials, configuration, and design of the structural system.
 - i. Where determined necessary, the State may retain greater control over configurations, materials, and methods for the project to limit the potential options available to proposers. This control is ensured by increasing the specificity of requirements, or more precisely, describing the specified building element(s) to anywhere between a 10% to 50% level of design. Doing so reduces the proposer's options to those appropriate for the specific project conditions. For example, the design agency could identify a particular type of building system or component, such as "steel structure." Here, the performance criteria and material specifications would be tailored to that particular structural type, leaving the actual structural configuration and design at the discretion of the offeror, but within constraints of the construction type described in the RFP. Performance requirements are qualified to a greater extent by prescriptive specifications. In some instances the State can specify a building element in mainly prescriptive terms if only one solution is appropriate or if it is impractical to develop enforceable performance criteria for that element.
 - ii. The State or contracted A/E developing the performance-oriented specifications must consider and decide upon the appropriate degree of control with regard to the procurement approach used for the project. For instance, an item to consider in this process is proposal evaluation for a

Design-Build project may involve design, architectural and engineering judgment as a factor in contract award. Distinctions can be drawn between a minimally acceptable proposal and one displaying superior qualities. Therefore, evaluators may exercise a degree of latitude in their judgment about conformance to minimum requirements and qualities exceeding the specified minimums.

- iii. Performance requirements and criteria must be enforceable and conformance to the specifications must be verifiable. Conformance with performance requirements can be verified through calculation, analyses, materials testing, or simple observation. Verification may occur at any one or several stages throughout the project: at the proposal evaluation stage, during final design and review/approval, or during construction.

IV. REFERENCE. The CSI Manual of Practice, Performance Specifications and Organization and Format for Performance Specifications provide guidance on specifying performance requirements. Other sources of information include the Design-Build Institute of America's Design-Build RFQ/RFP Guide, American Consulting Engineers Council Design/Build Understanding and Implementing.

- a. CRITERIA SOURCES. "Performance-oriented" specifications, national model building codes, industry design standards, and industry consensus standards should be used to the greatest extent practical. This will encourage innovation in building materials and methods of construction, and enhance competition by encouraging proposals from offerors knowledgeable of private sector criteria.
 - i. Appropriate standards for construction methods and materials likely to be proposed for the facility can be included by reference.
 - ii. Original specifications can be developed based on the fundamental performance requirements contained in the RFP; as in all specifications, they must be clear, concise, and complete relative to the functional and technical performance.
- b. FORMAT. Performance-oriented specifications should adhere to either the CSI 16-Division Format or to a "matrix" format. The appropriate format is determined by the specifications' content and composition.
 - i. The CSI 16-Division Format is recognized throughout the building design and construction industry. However, the 16-Division Format is largely materials-oriented in its divisions, broad-scope applications, and narrow-scope headings. In general, this format is appropriate when the State exercises a relatively higher degree of control over the configurations, materials, and methods proposed for the facility. This would include cases for which prescriptive specifications are necessary to a relatively greater degree, and for which the latitude or range of options appropriate for the specific project is not inhibited by division and broad-scope designations.
 - ii. A "matrix" is a common performance specification format wherein building elements comprise one axis of the matrix, with performance attributes

comprising the other. Specifications are developed for the appropriate intercepts of building elements and attributes.

1. Building elements are defined according to major building systems or functional assemblies, without regard to configuration, materials, or method. Building elements or systems can be defined to any degree of detail appropriate for the specific project. A facility's structural requirements can be expressed for the "superstructure" as a whole, or can be further defined according to "vertical structure," "roof deck," "floor deck," "stairs," or similar designation.
2. Attributes are characteristics of performance to be defined by requirements and criteria. Performance-oriented specifications are developed by applying attributes to building elements. Not all attributes will apply to the same building element, and an attribute will not necessarily apply to the same building element in all projects.

V. SPECIFICATION BY ATTRIBUTE. Specifying by attribute is appropriate for the CSI 16-Division or the “matrix” format.

- a. Once an attribute is associated with a particular building element, the desired performance must be defined. This is done by describing requirements, criteria, and tests. A requirement is a statement of desired results, usually in qualitative terms. Criteria are definitive statements of a performance level, stated in qualitative or quantitative terms. A criterion must be measurable, observable, or otherwise verifiable. A test is the method by which performance is measured and verified.
- b. Tests can include calculation or engineering analyses, laboratory or physical testing, or observation. These tests are applied at the appropriate step(s) throughout the project (e.g., proposal evaluation, final design, and construction). State of the art technology permits precise performance criteria to be established for most attributes. It may, however, be difficult to do so for other attributes. In the latter case, it may be necessary to complement general or less precise performance criteria with prescriptive specifications for particular building elements known to provide the required performance.

VI. ALTERNATIVE PRESCRIPTIVE SPECIFICATIONS

- a. A hybrid type of performance-oriented specification can include a statement that a particular building element can consist of one of several alternatives thereby allowing a prescribed number of design or technical options. Each option is specified in traditional prescriptive terms. This approach permits relatively simple specification and evaluation of proposals. In practice, however, it has many disadvantages.
- b. Designs are precluded that may provide the intended performance but do not strictly comply with the prescriptive specification. Also, it is unreasonable to include prescriptive specifications for all possible material alternatives for every building element. Furthermore, this approach creates a specification package

of considerable volume when applied to many building elements in a facility and defeats the purpose of seeking solutions from proposers.

- c. Such voluminous specifications place an additional burden on potential offerors, discouraging participation in the procurement and, therefore, competition. The practice of prescriptively specifying options for a single building element should be used only when no other performance-oriented specification technique will yield satisfactory results.

Sample Definitions for Building Elements -*		Sample Performance Attributes -		
<u>Substructure:</u>	Soil Conditions Engineered Fill Footings/Piers Foundations Slab	<u>Safety and Protection</u>	<u>Fire Safety</u>	Fire Areas Fire Barriers Egress Protective Devices Resistance/Combustibility Fire Load/Fuel Contribution Flame Spread Flame Propagation Smoke Generation Smoke Propagation Ignition
<u>Site</u>	Location Arrangement Proximity Connections Accessibility Solar/Wind/Snow Traffic/Parking Landscape Utilities		<u>Life Safety</u>	Security Physical Electrical Toxicity Chemical Biological
<u>Structure</u>	Vertical Horizontal Stairs Concrete Steel Masonry Pre-cast Roof		<u>Property Protection</u>	Theft/Security Security against vandalism Resistance to misuse
<u>Exterior</u>	Wall Types Doors and Windows Vents/Louvers Roof Systems Penetrations		<u>ADA</u>	Handicapped usage Mobility impaired usage Vision impaired usage Hearing impaired usage
<u>Interior</u>	Partition Wall Types Doors and Openings Floor Finishes	<u>Functional</u>	<u>Strength</u>	Static loading Live loading Horizontal loading Deflection Thermal loading

	Wall Finishes Ceiling Finishes Specialty Items			Structural serviceability Seismic loading Impact loading Penetration resistance Temporary loads
<u>Mechanical</u>	Plumbing HVAC Fire Protection Temp. Controls Special Systems		Durability	Impact Resistance Moisture Resistance Thermal Resistance Corrosion Resistance Chemical Resistance Weather Resistance Ultraviolet Resistance Surface Stability Stain Resistance Absorbency Clean-ability Color Resistance Abrasion Resistance Dimensional Stability System Life Maintenance Operability
<u>Electrical</u>	Power Lighting Telecomm/Data Fire Protection Special Systems		Transmission Characteristics	Heat/Cold Light Air Infiltration Vapor Penetration Water Leakage Condensation
<u>Furnishings, Fixtures, and Equipment</u>	Furnishings Fixtures Equipment		Waste Products and Discharge	Solid Waste Liquid Waste Gaseous Waste/Vapor Odors Particulates
			Operational Characteristics	Methods Results/Impacts Life Cycle Maintenance
		<u>Sensible</u>	Aesthetic Properties	Arrangement Composition Texture Color/Gloss Uniformity or Variety Compatibility or Contrast
			Acoustic Properties	Sound Generation Sound Transmission Reflectance
			Illumination	Levels Colors Shadows/Glare Reflection Day-lighting

			Ventilation	Air Quality Velocity Distribution Pressurization Temperature Humidity Control
			Measurable Properties	Level Plumb Dimensional Tolerances Volume Flatness Shape Weight/Density
			Material Properties	Hardness Ductility/Brittleness Malleability Resilience Elasticity/Plasticity Toughness Viscosity Creep Friction Expansion/Contraction
		<u>Practical</u>	Interface Characteristics	Fit/Feel Attachments Tolerances Modularity Rotational Inter-operable Relocate Sequence of Erection
			Service	Repairable/Replacement Inter-Changeable Accessible Convenience Extendable Adaptable Servicing/Frequency
			Personnel Needs	Maintenance Needs Personnel/Trades Training

* Each of the items in the listing will need to be expanded upon in more detail and depth for the purposes of defining the RFP technical criteria and for evaluating the same.

APPENDIX C - SAMPLE RFP TECHNICAL SUBMITTAL REQUIREMENTS

Note: these pertain only to the intimate, technical portions of the Request. Additional items are to be included as identified earlier in this report under “Establishing Criteria for the Selection Process.”

I. GENERAL

- a. The purpose for submittals is:
 - i. To provide enough information for the using agency and the A&E Division to determine whether the proposed facility will meet the RFP functional requirements for operational use during the anticipated life of the facility. Submittal requirements in an alternative delivery method proposal help distinguish the degree to which the proposal meets and exceeds the requirements for functionality, technical merits, and quality. Cost is to be analyzed separately.
 - ii. To provide the selection panel and TRP with enough data to determine the engineering sufficiency and soundness of the proposed design.
 - iii. To enable the offeror to develop a fair, reasonable, and competitive price proposal or bid to the State.
- b. The material content for submittals. The required submittal material will vary according to the specific project conditions and with the offerors' responsibilities for design and the procurement method used. Proposals must provide enough information to enable the State to conduct a complete and valid evaluation yet must not require such an expenditure of time, effort, and cost as to discourage participation in the procurement. RFP sketch layouts or drawings should be developed to no more than approximately 10 to 15 percent complete if maximum innovation by offerors is desired (but this may affect quality unless that portion of the RFP is well stated). Development to 35 percent and above is permitted but reduces innovation of materials and methods of construction, and effects competition. The degree to which proposal/submittal requirements will be developed must be described clearly in the RFQ stage.
- c. Design and technical submittal requirements. Typical alternative delivery method technical submittal requirements are listed below. The A&E Division should only select submittal requirements deemed necessary and appropriate to convey sufficient information that can be used to evaluate offerors' proposals relative to the specific project.
- d. The outline of items provided below is a very basic and generic attempt to list SOME of the items to be included in the RFP and what the offerors are required to provide for the State's analysis.

II. SITE DESIGN

- a. Site analysis narrative. Provide a brief description of the basic site layout and

the rationale behind this design. Address environmental conditions, existing site features, and the relationship of the site and building activities to the surrounding environment.

- b. Site plan(s). Include the following:
 - i. Building outline.
 - ii. Finish contours and retaining walls.
 - iii. Floor elevations.
 - iv. Sidewalks, road, service areas, parking, and ramps.
 - v. Existing buildings (as appropriate).
 - vi. Landscape design and materials.
 - vii. Site fixtures and accessories.

III. SITE ENGINEERING

- a. Site civil plan(s). Include the following:
 - i. Storm drainage layout indicating swales, inlets, and culverts.
 - ii. Retention and/or detention areas.
 - iii. Domestic water supply layout indicating controls.
 - iv. Sanitary sewer layout.
 - v. Gas Supply layout indicating controls.
 - vi. Steam or central heating/cooling water supply layout indicating controls.
 - vii. Utility tunnels (if appropriate).
 - viii. Electrical distribution layout indicating transformer locations.

IV. ARCHITECTURAL DESIGN

- a. Architectural design narrative. Provide a brief description of the building's architectural configuration and the rationale behind the design. Address environmental conditions, the relationship of the site and its activities to the building, appearance of the building, response to the architectural program requirements, selection of interior and exterior materials, and construction techniques. Describe fire safety measures, including fire egress routes, stair and passage dimensions, detection and alarm systems, and fire suppression systems. A code analysis must be performed and submitted.
- b. Floor plan(s). Include the following:
 - i. Walls and partitions.
 - ii. Doors, windows, and openings.
 - iii. Overall exterior dimensions and basic interior dimensions.
 - iv. Location of equipment, furnishings, and other plan features.
 - v. Room titles and net areas.
- c. Elevations. Include the following:
 - i. Exterior materials.
 - ii. Fenestration, openings, and doors.

- iii. Foundation outline, and finish grade.
- iv. Grilles, rails, and other architectural specialties.
- d. Building Sections. Include the following:
 - i. Roof, floor, and foundation structure, finish grade.
 - ii. Wall thickness.
 - iii. Ceilings.
 - iv. Overall vertical dimensions; interior vertical clearances.
- e. Typical Wall Sections. For each wall type include the following:
 - i. Materials.
 - ii. Wall thickness.
 - iii. Wall structure.
 - iv. Surfaces and finishes.
 - v. Thermal insulation.
 - vi. Water, moisture, and vapor protection.
 - vii. Detail at roof.
 - viii. Detail at floors.
 - ix. Detail at foundation.
- f. Door, window, and equipment schedules [as appropriate].
- g. Code analysis schedule.

V. INTERIOR DESIGN

- a. Interior design description. Briefly describe the building's interior design scheme and the rationale behind it. Include product literature and other descriptive materials, as appropriate. Address function, appearance, use of materials, considerations for safety or prevention of hazards, and considerations for the detailing or concealment of building utilities.
- b. Cabinets and trim. Provide product literature or other descriptive materials, as appropriate.
- c. Color scheme. Provide color samples, as appropriate.
- d. Signage and graphics. Provide product literature or other descriptive materials, as appropriate.
- e. Finishes. Provide a finish schedule. Provide color photographs of finish sample boards or other descriptive materials, as appropriate.

VI. BUILDING ENGINEERING

- a. Outline specifications. Provide outline specifications for the facility in CSI

16-Division Format. Include product literature and other descriptive material, as appropriate, to describe the proposed materials and systems.

- b. Structural design.
 - i. Provide a brief narrative description of the proposed structural approach. Describe the basic construction type and major structural materials. Indicate the rationale behind the proposed structural approach.
 - ii. Identify the codes, standards, criteria, and design methods around which the structural design will be developed. Indicate how the specified minimum structural criteria will be met or exceeded in the proposed design.
 - iii. Provide a basic structural plan, if not evident in the architectural drawings. Indicate items such as dimensions, expansion joints, seismic joints, and control joints.
- c. Mechanical systems (HVAC).
 - i. Provide a narrative description of the proposed mechanical design. Indicate the rationale behind the selection of the proposed systems. Address the fuel sources, environmental conditions, thermal envelope design, and operating characteristics of the HVAC system.
 - ii. Identify the codes, standards, criteria, and design methods around which the mechanical design will be developed. Indicate how the specified minimum mechanical and environmental criteria will be met or exceeded in the proposed design.
 - iii. Provide a basic mechanical plan. Indicate locations of equipment, distribution system, thermostat, and controls.
 - iv. Supply and equipment schedule. Describe the mechanical equipment, and include product literature and other descriptive material, as appropriate.
- d. Mechanical systems (plumbing).
 - i. Provide a brief narrative description of the proposed plumbing design. Indicate the rationale behind selection of these systems.
 - ii. Identify the codes, standards, criteria, and design methods around which the plumbing design will be developed. Indicate how the specified minimum plumbing criteria will be met or exceeded in the proposed design.
 - iii. Provide a plumbing plan. Indicate locations of equipment distribution system, valves, cleanouts, and controls.
 - iv. Provide a plumbing schedule. Describe the plumbing fixtures and equipment. Include product literature and other descriptive material, as appropriate.
 - v. Include fire protection system narrative with location of riser(s), fire department connections, connection to domestic system.
- e. Electrical systems.

- i. Provide a brief narrative description of the proposed electrical and lighting designs. Indicate the rationale of selecting these systems.
- ii. Identify the codes, standards, criteria, and design methods around which the electrical and lighting designs will be developed. Indicate how the specified minimum electrical criteria will be met or exceeded in the proposed design.
- iii. Provide an electrical plan. Indicate locations of equipment, distribution system, and controls.
- iv. Include a lighting plan. Indicate fixture and switch location and types.
- v. Provide an electrical schedule. Describe the electrical and lighting fixtures and equipment. Include product literature and other descriptive material, as appropriate.
- vi. Provide a fire alarm system narrative and layout.
- vii. Provide a telecomm and data wiring narrative of systems and equipment and layout of interior connections.

VII. LIFE-CYCLE COST

- a. Energy use. [Include the appropriate criterion.]
- b. Identify a proposed energy budget for the facility that must be verified and enforced during final design. Indicate factors for HVAC systems, lighting, and plumbing systems.
- c. Provide the specified energy budget analysis for the proposed building.
- d. Identify the positives and negatives of the building and equipment systems chosen in terms of their durability, clean-ability, operational and maintenance needs.

APPENDIX D - EXAMPLE RFP TECHNICAL EVALUATION CRITERIA

I. GENERAL

- a. The following items are typical of features or characteristics that should be examined at the quality value rating stage of an alternative delivery method project. This appendix is provided as a starting point checklist for developing technical evaluation criteria. On a project-by project basis, this list should be used to extract those features determined necessary to distinguish and achieve quality relative to the specific project.
- b. The selection team assembles and prepares the evaluation criteria which relate directly to submittal requirements. The evaluation factors also affect proposers' expenditures of time, resources, and cost to prepare a proposal. Offerors develop their proposals around submittal requirements and evaluation factors stated in the RFP. To this extent it is important to select and minimize the number of features as evaluation criteria to those that will aide in distinguishing a range of minimum quality acceptable to higher quality desired for the project. Too many evaluation factors will cause extensive design just to prepare a proposal.
- c. This appendix has been divided into three parts.
 - i. PART A: Building Related Features as Technical Evaluation Criteria;
 - ii. PART B: Offeror's Qualification as Technical Evaluation Criteria;
 - iii. PART C: Offeror's Management Plan as Technical Evaluation Criteria.

PART A: Building Related Features as Technical Evaluation Criteria.

1. SITE DESIGN. While the site design is an important feature of a project, detailed site design solution/drawings are not always an evaluation criterion for an alternative delivery method offer. However, if are to be made part of the offerors' proposals, factors and sub-factors listed below would be appropriate for consideration.
 - a. Building location/orientation.
 - i. Visual prominence: evaluate the building's placement on the site for visibility and/or visual impact within the local environment. Consider views and vistas both toward and from within the building.
 - ii. Site utilization: evaluate the building's placement in terms of function and efficient utilization of the site. Consider preservation of existing trees and other features.
 - iii. Orientation: evaluate the building's orientation and the relationships of functions and activities to the site and the vicinity. Assess the orientation with regard to solar, wind, and other environmental conditions.

- iv. Master-planned projects: evaluate the design considerations given to the building's site circulation, orientation, and appearance with respect to master-planned projects.
- b. Vehicular circulation.
 - i. Access to site: evaluate the site design for efficiency of access to and from the area. Consider the visual identity of driveways and entrances to the site, integration with the local traffic patterns, and the distinction between service traffic and normal automobile traffic.
 - ii. Circulation within site: evaluate the site design for traffic flow within the area. Consider convenience of access to parking spaces and drop-off areas, movement within parking lots, accessibility of service traffic, and any potential conflicts in traffic patterns.
 - iii. Safety: evaluate vehicular circulation patterns for potential safety hazards, both vehicular and pedestrian.
- c. Pedestrian circulation.
 - i. Site circulation: evaluate the site design for pedestrian traffic flow within the area. Consider building accessibility from the vicinity and from other activity areas within the site. Consider pedestrian movement among all activity areas within the site. Assess the accommodation and flow of pedestrian traffic within parking areas.
 - ii. Safety: evaluate pedestrian circulation for safety and possible conflicts with vehicular traffic on the site or when entering or exiting the site.
- d. Parking.
 - i. Number of spaces: consider adding parking spaces to exceed the specified minimum.
 - ii. Handicapped provisions: evaluate the location and arrangement of handicapped parking. Consider accessibility to the building entrances.
 - iii. Proximity to building: evaluate distances and location of parking areas with respect to the building's entrances. Consider the location and configuration of handicapped parking spaces.
 - iv. Appearance: evaluate the landscaping, use of islands, and other aesthetic characteristics of the parking areas.
 - v. Maintainability: evaluate the location and arrangement of parking areas in terms of snow removal, leaf and litter accumulation, and other maintenance needs.
- e. Landscaping.
 - i. Overall landscape design: evaluate the overall landscape design for functionality and integration with the natural environment and building design. Consider the landscape design's response to solar, wind, and other environmental conditions.
 - ii. Landscape materials: evaluate the landscape materials for

appearance and heartiness within the local environment. Consider qualities exceeding the specified minimums.

- iii. Maintainability: evaluate the use of landscape materials, landscape fixtures and accessories, and design configuration with respect to routine maintenance operations. Consider requirements for mowing, pruning, and trimming. Assess the vulnerability to damage vehicular and pedestrian traffic and other site activities.

2. SITE ENGINEERING. While the site engineering is an important feature of a project, detailed site engineering solutions/drawings would not normally be an evaluation criterion for a alternative delivery method offer. However, if made part of the offerors' proposals, factors and sub-factors listed below would be appropriate for consideration.

- a. Grading and drainage.

- i. Drainage layout: evaluate the storm drainage layout for anticipated performance. Consider the susceptibility of inlets to clogging.
- ii. Relation to site activities: evaluate the grading and storm drainage layout regarding coordination with other site systems and activities. Consider placement of inlets, catch basins, culverts, etc.

- b. Sanitary sewer.

- i. Layout: evaluate the sanitary sewer layout for efficiency and maintainability.
- ii. Materials: evaluate the sanitary sewer materials for qualities exceeding the specified minimums.

- c. Water supply.

- i. Layout: evaluate the water supply layout for efficiency and maintainability.
- ii. Materials: evaluate the water supply materials for qualities that exceed the specified minimums.

- d. Electrical.

- i. Layout: evaluate the electrical layout for efficiency and maintainability.
- ii. Materials: evaluate the electrical materials for qualities exceeding the specified minimums.

3. ARCHITECTURAL DESIGN. Even though aspects of architectural design are important features of a project, detailed architectural design solution/drawings would not normally be an evaluation criterion for a alternative delivery method offer. Often architectural design features, architectural theme, interior functional layout, and the performance requirements for building systems and materials are provided in the RFP. The quality of the project and the opportunity for innovative competitive bids are enhanced by proper selection of evaluation factors as listed below:

- a. Functional arrangement.
 - i. Overall plan arrangement: evaluate the overall arrangement of spaces, functions, and activity areas, and the relationships among them. Consider the arrangement of each primary space and the utility of supporting spaces to the primary functions.
 - ii. Building circulation: evaluate the circulation patterns within the building. Consider the adjacencies and proximity of spaces and the flow of activities among them.
 - iii. Integration with site activities: evaluate the relationship of the building's functions with the site design and activities.
 - iv. Acoustic control: evaluate the building's design, construction, and use of materials to control acoustics. Consider sound transmission between spaces, reverberation within spaces, and sound generation by mechanical and other equipment.
 - v. Visual control: evaluate the building's design regarding visual access and isolation between and among spaces and functions.
 - vi. Day-lighting: evaluate the building's design for effectiveness of fenestration and day-lighting.
- b. Net floor area. Evaluate the potential advantage of increasing the net floor area over the specified minimums in program or RFP: [list the appropriate spaces or areas].
- c. Exterior appearance.
 - i. Compatibility within the existing environment: evaluate the building's design for compatibility within the existing architectural and natural environment.
 - ii. Building form: evaluate the building's design in terms of form, shape, proportion, proper scale, and expression of functions and interior activities.
 - iii. Elevations: evaluate the building's elevations and exterior appearance. Consider the fenestration arrangement, articulation, and overall detailing.
 - iv. Use of exterior materials: evaluate the use of exterior materials. Consider their contribution to the overall architectural design and appearance of the building within the existing environment.
- 4. INTERIOR DESIGN. Like the discussion on the architectural evaluation criteria, interior design is an important feature of a project, detailed interior design solution/drawings would not normally be an evaluation criterion for a alternative delivery method offer. Often interior design features and the performance requirements for building systems and materials are provided in the RFP, but the quality of the project and the area for innovative competitive bid will be enhanced by proper selection of evaluation factors as listed below:

- a. Overall design scheme. Evaluate the overall interior design scheme. Consider appearance, function, use of materials, and maintainability.
 - b. Design for safety. Evaluate the interior design scheme for any potential hazards. Consider the location of fixtures and equipment, detailing of protruding features, suitability of finishes, and detailing of installed items.
 - c. Finish of building utilities. Evaluate the appearance of building utilities for concealment, color, detailing, and consistency with the overall interior design scheme.
 - d. Color. Evaluate the use of color and decorative graphics in the overall interior design scheme.
 - e. Signage and graphics. Evaluate signage and informational graphics for legibility and functional effectiveness, appearance, and character form.
 - f. Finishes.
 - i. Flooring: evaluate flooring for appearance, durability, and maintainability. Consider qualities exceeding the specified minimums.
 - ii. Wall surfaces: evaluate wall surfaces for appearance, durability, and maintainability. Consider qualities exceeding the specified minimums.
 - iii. Ceilings: evaluate ceiling surfaces for appearance, durability, and maintainability. Consider qualities exceeding the specified minimums.
 - iv. Fixtures and trim: evaluate light fixtures, built-in cabinets, trim and molding, and other finish work for appearance, durability, and maintainability. Consider qualities exceeding the specified minimums.
5. BUILDING ENGINEERING. While the aspects of building engineering are important features of a project, detailed engineering design solution/drawings would not normally be an evaluation criterion for a alternative delivery method offer. Often building engineering solutions are based on performance requirements for building systems and materials provided in the RFP, but the quality of the project and the area for innovative competitive bid will be enhanced by proper selection of evaluation factors as listed below:
- a. Overall construction quality. Evaluate the building's overall engineering and detailing quality. Consider qualities exceeding the specified minimums.
 - b. Structural design.
 - i. Design criteria: evaluate the potential advantage in exceeding the minimum specified structural criteria in any areas of the structural design.
 - ii. Layout: evaluate the structural layout for compatibility with the facility's activities and plan layout.

- iii. Integration with other systems: evaluate the structural design in terms of interface and accommodation of other building architectural and mechanical systems.
 - iv. Materials: evaluate structural materials for qualities exceeding the specified minimums.
 - c. Exterior materials and systems.
 - i. Roof system: evaluate the weather-tightness, longevity, and detailing of the roof system. Consider qualities exceeding the specified minimums.
 - ii. Wall construction: evaluate the weather-tightness, longevity, and detailing of the exterior wall system. Consider qualities exceeding the specified minimums.
 - iii. Windows, doors, openings: evaluate the weather-tightness, longevity, and detailing of the windows, doors, and other exterior openings. Consider qualities exceeding the specified minimums.
 - d. Mechanical systems (HVAC).
 - i. Design criteria: evaluate the anticipated performance and effectiveness of the proposed mechanical scheme. Consider performance exceeding the specified minimums.
 - ii. Equipment and materials: evaluate the selected mechanical equipment and materials for anticipated performance, maintainability, and service life. Consider performance exceeding the specified minimums.
 - iii. Layout: evaluator equipment location and distribution layout for efficiency, and maintainability. Consider their integration with other building mechanical systems.
 - e. Mechanical systems (plumbing).
 - i. Design criteria: evaluate the anticipated performance and effectiveness of the proposed plumbing scheme. Consider performance exceeding the specified minimums.
 - ii. Equipment and materials: evaluate the selected plumbing equipment and materials for anticipated performance and maintainability.
 - iii. Layout: evaluate equipment location and distribution layout for efficiency maintainability. Consider the integration with other building mechanical systems.
6. LIFE-CYCLE COST. In the absence of a requirement for life-cycle cost requirements, especially if the performance specifications are not written to obtain high quality, then project value from a life-cycle standpoint is a risk to the customer. Life-cycle cost as an evaluation criterion can be used to strengthen the possibility of a high quality product. Consider the factors and sub-factors listed below when life-cycle is to be an evaluation criterion.

- a. Energy use.
 - i. Calculated energy cost: incorporate the calculated energy cost for HVAC and lighting systems into the proposal price [as appropriate for the specific project and evaluation approach].
 - ii. Calculated/simulated energy budget: incorporate the calculated or simulated energy budget for HVAC and lighting systems into the quality point score [as appropriate for the specific project and evaluation approach].
 - iii. Proposed energy budget: incorporate the proposed energy budget for HVAC and lighting systems into the quality point score [as appropriate for the specific project and evaluation approach].
 - iv. Qualitative evaluations for the energy use of HVAC and lighting systems can be included in the evaluation of each system.
- b. Repair, Maintenance, and Replacement.
 - i. Calculated repair and maintenance cost, and replacement: incorporate the calculated repair and maintenance costs, and replacement costs into the proposal price [as appropriate for the specific project and evaluation approach].
 - ii. Qualitative evaluations for repair and maintenance, and replacement of building systems and materials can be included in the evaluation of each system.
 - iii. Replacement cycles: incorporate anticipated replacement cycles into the quality point score [as appropriate for the specific project and evaluation approach].

PART B: Offeror's Qualifications as Evaluation Criteria:

1. PERSONNEL

- a. Identification. Evaluate whether the names, resumes, registration data, and levels of responsibility for personnel assigned to design and construction activities reflect quality personnel with the proper credentials.
- b. Experience. Evaluate whether each individual identified has had a significant part in any of the project examples cited and consider the number of years each has been in his/her respective profession.
- c. Re-assignment. If re-assignment of personnel is considered possible, evaluate the quality of the alternative professionals identified using the standards mentioned above.

2. PROJECT EXAMPLES

- a. Projects. Evaluate the project examples submitted for overall standard of quality, similarity to the proposed project, and congruity with the same level of standards required for the proposed project.
- b. Reference contact. Assess the degree of satisfaction and recommendation for an alternative delivery method team's work reflected by previous clients.
- c. Content of project examples. For each example cited, evaluate the general characteristics, scope, location, cost, and date of completion.
- d. Joint ventures. Evaluate the project examples cited by each of the firms involved and whether they have experience working together. Consider the above mentioned qualities when evaluating each firm.

3. COMMITMENT

- a. Statement. Evaluate the nature of the offeror's commitment of personnel and resources to the project, as required from the principal-in-charge.
- b. Joint venture. If the project is a joint venture, evaluate the nature of the commitment from each firm involved.

4. LIQUIDATED DAMAGES

- a. Explanation. Evaluate the list and explanation furnished on all projects for which liquidated damages have been assessed. Consider the time periods involved (i.e., how long delinquent or past deadline). Evaluate the circumstances involved in each case and the reasons for assessing liquidated damages. Judge the likelihood of the alternative delivery method team to incur delays and liquidated damages for the project under consideration.
- b. Joint venture. If the project is a joint venture, evaluate the explanations furnished for assessed liquidated damages on projects from each firm involved.

5. TERMINATION

- a. Explanation. Evaluate the list and explanation furnished on all projects from which the offeror has been terminated for default or for convenience. Consider a designated time period, the circumstances involved in each case, and the reasons for termination.
- b. Joint venture. If the project is a joint venture, evaluate these

explanations for each firm involved.

6. FORMS

- a. Required forms. Check whether the offeror has submitted the proper forms. Consider the thoroughness of completion and the clarity.
- b. Additional forms. Evaluate additional information submitted on the offeror's qualifications. Consider the usefulness and conciseness of the information in describing these qualifications.

PART C: Offeror's Management Plan as Evaluation Criteria:

1. QUALITY CONTROL PLAN

- a. Identification. Evaluate the offeror's clarity in identifying the personnel responsible for quality control and in the policy establishing their authority.
- b. Description. Assess whether the description of tasks and functions for quality control personnel is specific enough to understand their purpose clearly.
- c. Schedules. Evaluate the offeror's ability to define a specific policy that establishes schedules for performance of quality control tasks.
- d. Findings. Check whether the program contains an adequate policy for reporting quality control findings to the construction manager.
- e. Disputes. Check whether the program contains an appeal system that clearly defines the person to resolve disputes.
- f. Test data. Assess whether the program provides the names of laboratories to be used and identifies the procedures used for test data reporting. Consider the reputation and responsiveness of the lab(s).
- g. Material storage. Evaluate the program's plan for the storage and protection of construction materials. Consider the security plan for the materials as well as the methods of protection.

2. DESIGN AND CONSTRUCTION SCHEDULE

- a. Phases. Evaluate the offeror's ability to identify and implement a schedule for all phases of the project.

- b. Rationale. Evaluate the submission stating the offeror's rationale on how the proposed schedule will be achieved. Consider if it is realistic, if the dates set for the completion of items are feasible or if it is talk-oriented, check whether it indicates dates by which construction milestones are to be achieved.
- c. Graphics. Evaluate the graphic representation of the schedule. Consider its clarity in enabling the construction manager to monitor the progress easily.

3. MOBILIZATION PLAN

- a. Immediate mobilization.
 - i. On-site contractor facilities. Evaluate the length of time scheduled to set up office facilities on the site with regard to the date of the pre-construction conference. Consider the arrangements presented for telephones, utilities, parking areas, storage facilities, security measures, and signage.
 - ii. Personnel. Evaluate the arrangement proposed for assembling the necessary personnel to prepare the site and facilities for construction.
 - iii. Equipment. Evaluate the arrangements proposed for assembling the equipment needed to prepare the site and facilities according to the construction schedule.
- b. Site organization.
 - i. Construction plan. Evaluate the offeror's intent to furnish a detailed site construction plan upon contract award. Consider the representation of all construction facilities, on-site temporary buildings and equipment, assigned storage and operating areas, roads, parking areas, and entrances.
 - ii. Temporary construction. Evaluate the offeror's plan to construct temporary roads and parking areas, erect necessary signs, fences, and gates, and install telephone and utility connections upon contract award.
 - iii. Utilities. Evaluate the offeror's assurance that all existing utilities and power lines will be located properly by the respective companies and authorities prior to initiating work.

4. DEMOBILIZATION PLAN

- a. Scheduling. Check whether the offeror intends to start demobilization planning as soon as work begins. Note if detailed staging plans will be developed for each phase of construction to improve safety and working conditions. Consider plan for removing materials/equipment and eliminating unnecessary equipment, materials, and personnel from the site.

- b. Coordination. Check whether a specific demobilization schedule will be developed in coordination with the project closeout plan and with all subcontractors. Consider the plan to create appropriate checklists and procedures for site closeout and facility turnover, the listing of specific dates for removal of equipment and construction facilities, departure of personnel, and arrangements for the discontinuance of telephones and utilities.

5. LOGISTICS PLAN

- a. Scheduling methods. Evaluate items included in the scheduling process. Consider key activities, critical and long-lead time materials, subcontractor requirements, allowance for change orders, coordination meetings, and frequency of schedule updates.
- b. Material procurement. Evaluate the plan for the ordering and receipt of materials/equipment that could affect the project schedule. Consider how the schedule will be monitored and expedited, and the personnel who will be responsible for it.
- c. Management of subcontractors. Evaluate the plan to prevent impact on the project schedule through errors or omissions by subcontractors. Consider supervisory and administrative functions that will enhance the subcontractor's performance and prevent delays.
- d. Manpower use. Check whether the work force proposed for the project is carefully controlled and monitored throughout the duration of the project and with whom the ultimate control of work force rests. Evaluate the offeror's plan to track personnel costs and the time basis on which these labor reports will be produced.
- e. Productivity monitoring. Evaluate what the offeror uses as a measuring device to help assess job productivity. Consider the proposed scheduling methods, what the subcontractors are required to submit for scheduling methods (e.g., identification of the appropriate labor hours, crew sizes, number of crews, and scheduled usage of crews), and what methods are proposed to meet schedules (e.g., increasing crew size, increasing crews, overtime and shift work to meet schedules).

6. FUNDS CONTROL PLAN

- a. Subcontractors and suppliers. Evaluate the corporate purchasing power and reputation. Consider the prompt payment policy to subcontractors and suppliers upon proper invoicing and completion of work as scheduled. Consider the offeror's plan to purchase supplies and materials from local

sources.

- b. Financial condition. Evaluate the offeror's financial condition of each subcontractor prior to issuing subcontracts.

7. CONTRACT CLOSEOUT PLAN

- a. General procedure. Evaluate the proposed scheme for closing the contract agreement and the offeror's duties.
- b. Provisions.
 - i. Record documents: evaluate the plan to transfer changes recorded on the record set of prints and other documents used during the construction period to the reproducible drawings in a neat, legible manner; corrected material should be turned over to the owner as a permanent record.
 - ii. Punch list and final inspection: evaluate the offeror's plan to provide to the owner, in writing, the date the work will be ready for final inspection in accordance with the contract.
 - iii. Substantial completion and final payment: evaluate the offeror's plan to complete all work on the punch list and to prepare the Certificate of Substantial Completion for turnover and beneficial occupancy.
 - iv. Warranties: evaluate the offeror's plan to provide warranties and operation/maintenance manuals for materials and equipment. Consider the need for serial numbers, model numbers, suppliers, points of contacts, telephone numbers, description, number of copies, and personnel responsible during the warranty period.
 - v. Cleanup: evaluate the provisions for cleanup prior to owner takeover. Consider the removal of temporary facilities, trash, and debris from the construction site and additional provisions that will be furnished in the specifications once the contract is awarded.
 - vi. Operation, maintenance, training: evaluate the proposed provisions for supplying all necessary operating, maintenance and repair instructions, obtaining spare parts, and training personnel if required. Consider if all necessary items are addressed and if the agency will be well prepared to operate the facility.
 - vii. Point of contact: evaluate the plan to assign an authoritative person to handle warranty matters. Consider the ease of access to this person and whether both contractor and subcontractor are represented.

[END OF REPORT]